

THINKING OUTSIDE THE BOX

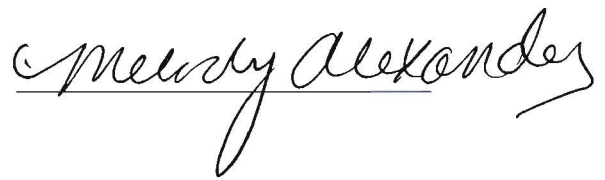
Software Licensing and Alternative Software Solutions

An Honors Thesis (Honors 499)

By

Nicole Smith

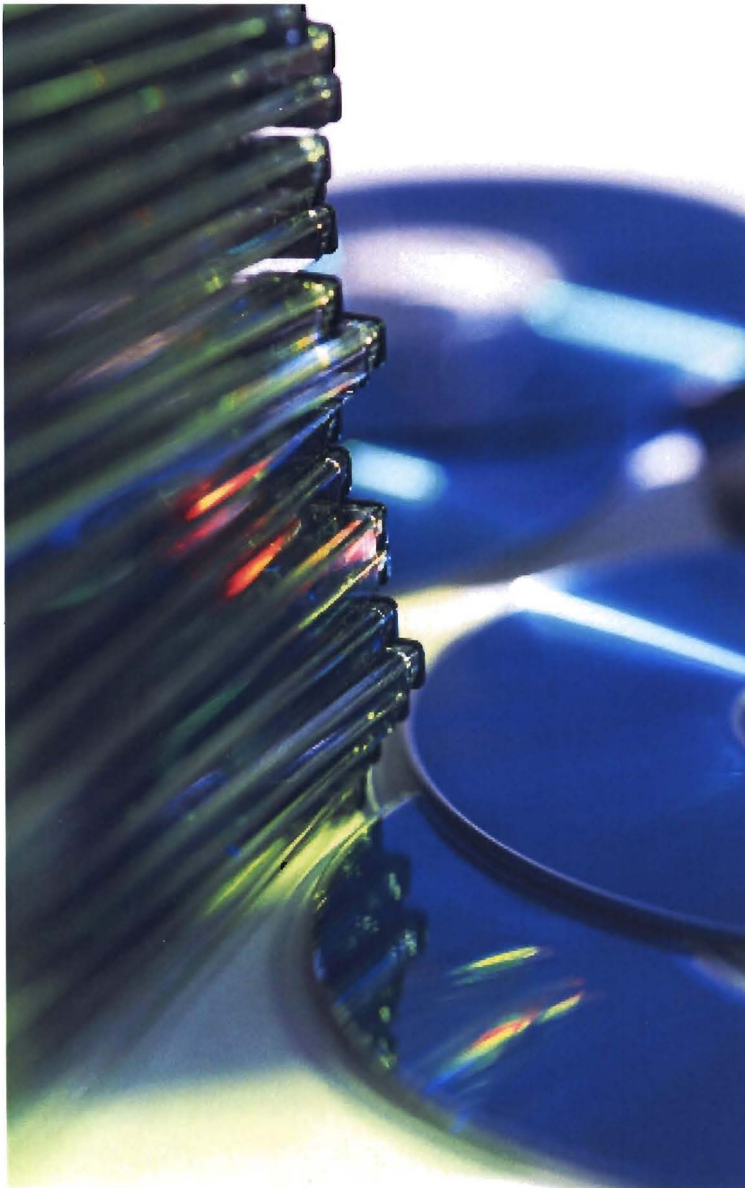
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A handwritten signature in black ink that reads "Melody Alexander". The signature is written in a cursive style and is positioned above a horizontal line.

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Abstract

Small businesses spend a large amount of money on software and software upgrades every year. If they implemented a free software program, it would save them money. The beliefs of the Free Software Movement support the goals of small businesses, and the nature of free software allows the businesses to modify software to fit their needs. This paper identifies the cost savings associated with implementing a free software solution, relates the history of the free software movement, describes the type of free software available, and provides a brief tutorial on OpenOffice and GIMP, two commonly used free software programs.

Section 1

Decoding Software Licenses



Chapter List

Chapter 1

Introduction to Software Licenses and Small Business

Chapter 2

Free Software vs. Open Source Software

Chapter 3

Advantages of Free Software for Small Business

Introduction

In the current market, a small business must have enough capital for traditional building and equipment purchases. However, they must also have capital to purchase software needed to run the business. When industry standard packages cost several hundred dollars for one license, companies must find more investors or ask their core of investors for more money. If a company that engages in basic marketing activities has five computers with a standard image, it must spend \$7,169.80 on software (Microsoft windows vista ultimate DVD – retail, n.d.; Microsoft office professional 2007 – retail, n.d.; Adobe photoshop CS3; Total protection for small business, n.d.). Table 1 contains a detailed list of software costs. If a company could save even half of the cost to obtain twenty licenses, it would greatly improve its return on investment (ROI) potential.

Table 1: Software Cost per Computer

SOFTWARE PACKAGE	COST PER COMPUTER
Windows Vista Ultimate	\$319.99
Microsoft Office 2007 Professional	\$429.99
Adobe Photoshop CS3	\$649.00
McAfee Total Protection for Small Business	\$34.98
Total	\$1,433.96

Sources: Microsoft Windows Vista Ultimate DVD – retail, Microsoft Office Professional 2007 – retail, Adobe Photoshop CS3, and Total Protection for Small Business

In 1984, the free software movement began on the Massachusetts Institute of Technology (MIT) campus when employees in the Artificial Intelligence Lab became frustrated with proprietary software programs and the nondisclosure agreements employees were forced to sign so as to work with those programs (Stallman R. M., 2002). The nature of free software, which is discussed in detail in Chapter 2, allows users to obtain copies of the program at little or no cost. By implementing a software solution that includes free software,

small businesses will increase their ROI potential. They will also be able to avoid software license agreements that severely restrict their ability to use and adapt the copies of software they own. More advantages of free software are discussed in Chapter 3.

Software licenses define the rights of the licensee. They include terms of use and a support and maintenance clause. The terms of use prohibit modifications to the software, even if the changes increase the product's value to the customer. The terms of the support and maintenance clause will often specify that the licensor can drop the licensee's support at will. Consumers may find themselves without support in times of need.

Chapter 1

Introduction to Software Licenses



Every software product comes with a license agreement the user must accept before using the product. License agreements include clauses for usage limitations, ownership, support and maintenance, copyright and confidentiality, warranty and liability, and indemnification that define the relationship between the licensor and licensee (Overly & Kalyvas, 2004). Both the vendor and the licensee can be corporate or individual entities. There are two types of standard agreements: vendor oriented licenses for proprietary software and the GNU General Public License for free software.

Vendor Oriented Licenses

Vendor oriented licenses are derived from a standard vendor form license. They protect the vendor, and they often contain terms that are not beneficial to the licensee (Larsson, 2007). The vendor may occasionally insist upon multiple agreements, such as a service agreement, a license agreement, and a support agreement because different departments in the vending company are involved with the license. Multiple agreements are confusing since elements of the agreements, like definitions of terms and remedies for damages, may be inconsistent across the agreements (Overly & Kalyvas, 2004).

GNU General Public License

The GNU General Public License (GPL) was designed to protect the four basic freedoms of the free software movement, which are discussed in Chapter 2. It resembles a form vendor license in appearance, but its content protects the creators and users of the software program. It also contains a copyleft clause that requires anyone who “distribute[s] copies of such a program, whether gratis or for a fee...must pass on to the recipients the same freedoms that [he or she] received” (GNU, 2007, p. 1). Unlike the vendor-oriented license, the GNU GPL allows users to modify the software program to adapt to their needs. The users are also permitted to pass on their changes to other users (GNU, 2007).

Parts of a Standard Software License Agreement

A standard license agreement includes the following sections: definition of terms, software license, support and maintenance, term, fees and payment, confidentiality, limited warranty, disclaimer of warranties, limitation of liability, indemnification, default and termination, equitable relief, independent contractor, notices, force majeure, choice of law, entire agreement, severability, assignment, waiver, headings, agreement drafted by both

parties, and counterparts (Overly & Kalyvas, 2004). Depending on the type of software package, a license agreement may not include every section.

Definitions

This section defines terms used throughout the agreement. This ensures that the terms will be used consistently and that licensees understand the terms to which they are agreeing (Overly & Kalyvas, 2004).

Software License

The software license section has several subsections that define the terms and limitations of the agreement. It will grant the licensee the right to use the software in a specified manner, limit the usage restrictions of the licensee, define ownership of the program, relay copyright information, and specify the delivery mechanism of the program (Overly & Kalyvas, 2004).

Support and Maintenance

The licensor's obligation to support the product after the sale is set forth in this section. This section may refer to an external support document that defines the licensee's support payment obligations. It also releases the licensor from its obligations in the instance of licensee neglect (Overly & Kalyvas, 2004).

Term

The term section identifies the period of service. The beginning date is often the reference date of the agreement. An end date is specified, but the license may be terminated earlier (Overly & Kalyvas, 2004).

Fees and Payment

Methods, reasons, and a schedule for payment are outlined in this section. It may reference an external payment document. It will include several subcategories for identification of fees related to the agreement (Overly & Kalyvas, 2004).

Confidentiality

The software license may include a section on confidentiality. The licensor identifies a need for confidentiality and requires licensees to agree to keep information about the software confidential (Overly & Kalyvas, 2004).

Limited Warranty

This section ensures licensees that the software will perform according to specifications for a certain period of time. It also excludes the licensor from responding to warranty claims if problems are caused by the licensee's negligence (Overly & Kalyvas, 2004).

Disclaimer of Warranties

This section expressly names conditions under which the licensor is not responsible for warranty claims. It ensures the licensee understands warranty conditions must be explicit and not implied (Overly & Kalyvas, 2004).

Limitation of Liability

The limitation of liability restates the idea that the licensor is not responsible for consequential losses from the use of the software. It usually limits direct losses to the fees paid for the program (Overly & Kalyvas, 2004).

Indemnification Clause

This section may state that the licensor is not responsible for lawsuits against the licensee caused by use of the software. However, in some agreements, the indemnification clause may protect the licensee from claims brought against it by a third party. In this case, the vendor is obligated to defend the licensee. The purpose of the indemnification clause is to define responsibility for claims brought against the software program (Overly & Kalyvas, 2004).

Default and Termination

The default and termination clause of the license agreement has several subsections. One subsection specifies that the agreement is null if either the licensor or licensee defaults on the agreement and does not rectify its mistake(s) according to the conditions outlined in the agreement. Another subsection requires the licensee to stop using the product after the end date of the contract term has passed. A third section acts as a statute of limitations on a breach of contract (Overly & Kalyvas, 2004).

Equitable Relief

This acts to protect the licensor in the event that the terms of the software license and confidentiality sections cannot be enforced. The licensee must agree to legal remedies and compensation for a breach of the terms in either section (Overly & Kalyvas, 2004).

Independent Contractor

This asks the licensee to agree that it has no affiliation with the licensor other than a business to consumer relationship (Overly & Kalyvas, 2004).

Notices

The addresses of the licensor and the licensee are specified in the notices section. The addresses will be used if one party needs to notify the other party of a change or breach of the license agreement (Overly & Kalyvas, 2004).

Force Majeure

This clause exempts the vendor from failure to meet the terms of the license agreement because of external forces. These forces include, but are not limited to, acts of god, governmental actions, or labor strikes that affect the licensor's ability to honor the contract (Overly & Kalyvas, 2004).

Choice of Law

This section identifies a body of law that ensures the validity of the agreement. It may be a federal, state, or local body of law (Overly & Kalyvas, 2004).

Entire Agreement

This section protects the vendor and the licensee in case of a disagreement. It states that the license agreement contains all provisions agreed upon, so neither party can claim it was promised additional measures of protection or use (Overly & Kalyvas, 2004).

Severability

This clause states that if a term in the agreement is unenforceable, other terms and conditions in the agreement are still valid (Overly & Kalyvas, 2004).

Assignment

The licensor is given the right to sell or dispose of the agreement if the licensee wishes to reassign the license in the assignment section. This assures the licensor that the licensee will not make money through the disposal of software licenses (Overly & Kalyvas, 2004).

Waiver

This section identifies methods to validate a waiver in the event of a change in the agreement (Overly & Kalyvas, 2004).

Headings

The headings section exempts the licensor from honoring terms because of a connotative meaning of the headings (Overly & Kalyvas, 2004).

Agreement Drafted by Both Parties

This section states that ambiguities are not the fault of either the licensor or the licensee (Overly & Kalyvas, 2004).

Counterparts

The counterparts section allows the agreement to be propagated to all uses of the software on the part of the licensee (Overly & Kalyvas, 2004).

Assessing Consumer Protection of Software Licenses

Michael Overly and James R. Kalyvas (2004) recommend a three step process in evaluating software licenses: (1) answer four basic questions about the licensor and licensee, (2) use their basic software checklist to evaluate the agreement, and (3) make an effort to understand license agreements. Following these steps allows the licensee to determine the value the software package adds to its business. It also aids the licensee in determining ways the licensor could exploit the agreement.

1. Answering the Questions

The four basic questions Overly and Kalyvas suggest each licensee ask itself before evaluating the agreement itself are:

- 1. How will the software package enable the licensee to increase business performance?*

If the licensee is unable to find a viable and dramatic reason to implement the solution, the software may not be needed.

- 2. Is the application essential to business performance?*

A more critical application will require a more stringent agreement to ensure the licensee has the maximum amount of support and the software functionalities are available to it all of the time. Engaging in a large amount of negotiating for a less critical software package could be a waste of time.

- 3. What are the costs of the application, including maintenance fees?*

By examining all costs, the licensee will be able to determine the long-term feasibility of the solution. It will be unable to negotiate new pricing terms during the contract period, so careful scrutiny before agreeing to the terms ensures maximum benefit for the licensee.

4. What is the implementation time for the solution?

If the time to implement is too long, it may cost more to manage the implementation process than the solution is actually worth. By researching the entire process for implementation, the licensee will determine the package's benefit to the organization (Software agreements line by line, 2004).

2. Using the Checklist

Overly and Kalyvas (2004) provide readers with a basic checklist of items to consider during the evaluation of a software license. Appendix A shows the list, which has been modified for this handbook. However, licensees should consider this checklist as a starting point for creating their own checklist. Each transaction will have a different set of requirements, and each licensee will have its own beliefs. Additional concerns should be created based upon the unique needs of the organization at the time of the transaction (Software agreements line by line, 2004).

3. Understanding License Agreements

Before entering into negotiations, a licensee that is unfamiliar with license agreements should seek to become knowledgeable about them. Licensees should research license agreements, but they should also consult with legal counsel to understand the terms and ramifications of the agreement completely. After the licensee has experience with negotiating the terms of a license agreement, it should keep copies of all original and negotiated contracts from its vendors. This will allow them to reference previous agreements when negotiating new terms or new licenses (Overly & Kalyvas, 2004).

Negotiating Software Licenses to Protect the Licensee

Because standard licensing agreements are vendor-oriented, the licensee must take measures to protect itself. In addition to identifying key issues through the Overly and Kalyvas checklist, it should make seven key changes to the license agreement (Auer, 2000).

1. The licensee should ensure that the licensor is granting a perpetual and irrevocable license. If the license does not contain this clause, the licensee may be purchasing a software license that is valid for a short amount of time
2. The license should state that warranties are valid for 1 year. Because the software application may not achieve peak usage during the standard 30 to 90 day warranty, a 1-year warranty ensures the licensor is responsible for software that does not perform under normal operating conditions.
3. Specific remedies should be defined in case the software does not perform as expected or the vendor discontinues product support. A remedy for poor performance may include immediate fixes or reimbursement of licensing fees. The licensee should require the vendor to supply the source code if the vendor chooses to discontinue support.
4. The license must include a specific amount of time for the support period. If the licensee fails to obtain a specific support time period, it may be faced with pressure to buy a new product. The support agreement should contain provisions for product updates and upgrades.
5. The licensee should negotiate a license that includes requirements for divestiture. If a corporate division is sold, it should retain the right to use the product for a specified period of time.
6. The indemnification clause should protect the licensee, not the licensor. Software license negotiations must ensure the licensee is protected from claims made by third parties.
7. The assignment clause must allow the licensee to transfer the license to another business unit. It should also allow the transfer of the license to another business entity if the business process that utilizes the application is outsourced.

In addition to negotiating these changes, the licensee must ensure the agreement is specific. General agreements may be interpreted differently by the licensor and licensee. Because the vendor creates the license for its own best interests, the licensee must protect itself. If it has any questions about the nature of the contract, it should contact legal counsel.

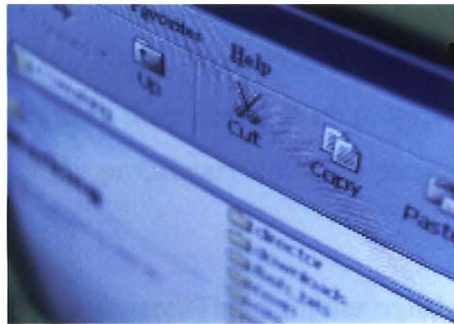
Using Software Asset Management to Maintain Legality

A software license agreement assigns the licensee a certain number of licenses for that application. In general, a license specifies how many computers on which the package can be installed. For example, if a company purchased 25 licenses for an office productivity package, it could install the software on 25 computers. It could not install the software on more than 25 computers, even if it only planned to use the program on 25 computers. A violation of this clause is a breach of contract, and it could result in legal penalties. It can be hard to track the number of computers on which each application is installed as a company grows. According to Centennial, 71 percent of Information Technology managers in England knew or were not aware that their companies had overused their license limits (as cited in Underwood, 2007). Software asset management (SAM) software can help companies track the installation of software packages.

SAM programs, like Microsoft's Systems Management Server, help organizations inventory their use of software. However, SAM programs are of little use if installation files are not protected. Measures must be taken to ensure employees cannot access these files, copy them to a CD or flash drive, and install them at home. Companies should implement policies that prevent employees from installing software onto their work computers. An employee should not be able to install pirated or unauthorized software on his or her work computer. The company is responsible for that computer, so it would be responsible for penalties derived from the installation and use of the software (Underwood, 2007).

Chapter 2

Free Software vs. Open Source Software



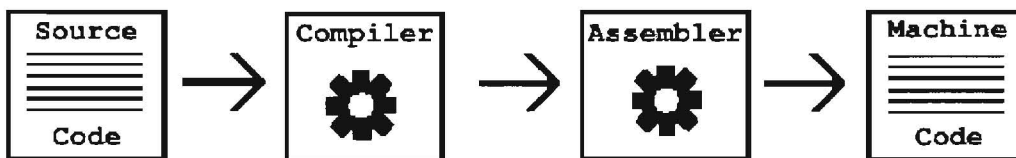
Nonproprietary software, which is often called free or open source software, is inherent to the software industry. However, the term “free software” was coined in the 1980s (Stallman R. M., 2002). The open source movement, which is similar to the free software movement, began in 1998 (Tiemann, 2006). The term “open source” has gained popularity, but users often misunderstand the difference between the two movements.

Definitions

Technology is inherent to the histories of the free software movement and the open source movement. A complete understanding of software creation is not necessary, but it is necessary to understand basic terminology. There are two basic types of software: free/open source software (FOSS) and proprietary software. Because of their similarities, free and open source programs are considered the same type of software. The main difference between the two is the availability of the program’s source code. The software’s source code is the set of commands a software programmer writes (Stallman R. M., 2002). With FOSS, the source code is freely available, and users can modify the program to fit their needs. With proprietary software, the source code is not available to users. Common proprietary software programs include Microsoft Office and Adobe Photoshop.

The compiler is also important to the history of free software. The compiler translates the source code into a language the assembler can translate into machine code. The machine code provides the computer with a set of commands it can understand (Stallman R. M., 2002). The process is shown in Figure 1.

Figure 1: Translating Source Code



Source: Stallman R. M., 2002, p. 3

The operating system’s kernel is its central component. The kernel performs low-level tasks like scheduling and managing system resources. Without the kernel, the operating system cannot run.

The History of the Free Software Movement

Free software is a concept inherent to the software industry. All early software programs allowed users to view the source code (Bisson, 2007). This allowed users to modify the programs to improve their functionality. In 1969, the UNIX operating system was developed in AT&T's Bell Labs (Bisson, 2007). AT&T owned UNIX even though many University of California Berkeley students had worked on the project, and AT&T did not reveal the source code (Bisson, 2007). This began the commercialization of software industry. Proprietary software companies did not reveal the source code for their applications, and programmers were unable to modify software to add functionality.

Richard Stallman, who is the leader of the free software movement, began work at the Massachusetts Institute of Technology's (MIT's) Artificial Intelligence (AI) Lab in 1971 (Stallman R. M., 2002). The employees in the AI Lab used a free operating system developed during the course of their work. When new computer systems came into the market, they had their own operating systems, and the AI Lab stopped using its operating system. Employees had to sign a nondisclosure agreement (NDA) to work with the new operating system, and they could not modify the program (Stallman R. M., 2002).

As proprietary software became more popular and users had to sign NDAs to work with the program, Stallman became frustrated with the system. When he was unable to modify a printer program to make printing easier because of an NDA, he realized his freedom had been compromised by proprietary software (Stallman R. M., 2002). In 1984, Stallman quit his job at the AI Lab to develop the UNIX-based GNU operating system (Stallman R. M., 2002). The GNU project was based on Stallman's concept of "free software," which he says "is a matter of liberty, not price. To understand the concept you should think of 'free' as in 'free speech,' not as in 'free beer'" (2002, p. 43). Free software is further defined by Stallman's four basic freedoms:

- Freedom 0: The freedom to run the program, for any purpose.
- Freedom 1: The freedom to study how the program works, and adapt it to your needs. (Access to the source code is a precondition for this freedom).
- Freedom 2: The freedom to redistribute copies so you can help your neighbor.

- Freedom 3: The freedom to improve the program, and release you improvements to the public, so the whole community benefits. (Access to the source code is a precondition for this freedom) (2002, p. 43).

“Free” does not mean the software is available at no cost. Software can be distributed for a fee. In fact, Stallman sold copies of the GNU compiler for \$150 to users who could not access the files over the Internet (Stallman R. M., 2002). “Free” simply means the program allows its users freedom of operation and redistribution.

Stallman continued to work on the GNU project through the 1980s. In 1985, Stallman founded the Free Software Foundation (FSF) to facilitate free software development (Stallman R. M., 2002). By 1990, the GNU operating system was complete except for the kernel (Stallman R. M., 2002). He continued work on the project, but Linus Torvalds developed a kernel (Linux) that was compatible with UNIX in 1991 (Stallman R. M., 2002). In 1992, the Linux kernel and Stallman’s work on the GNU operating system were combined to form GNU/Linux, which is commonly known as Linux (Stallman R. M., 2002).

The History of the Open Source Software Movement

The free software movement and the open source software movement share the same history until 1998. The beginning of the open source movement can be traced to Netscape’s revelation that it would release the source code of Netscape Navigator in 1997 (Tiemann, 2006). In February 1998, a group of people active in the free software movement participated in a Netscape strategy session in Palo Alto, California (Tiemann, 2006). The attendees chose the name “open source” to differentiate themselves from the free software movement.

The open source movement has ten criteria with which open source software must comply:

1. The software must be redistributable, and its redistribution may be at no cost.
2. The source code of the software must be available for all users. If a program is distributed without its source code, the distributing party must provide the user with a way to access the code.
3. The software can be modified.

4. Distribution after the program has been modified is allowed. The only place source code can be protected is in patch files.
5. The software and its license must be nondiscriminatory.
6. Any entity is permitted to use the program.
7. The license is applicable to all users to whom the program has been distributed.
8. The software program cannot be attached to a software package; it must be able to be used independently of any other program.
9. The program cannot restrict the functionality or distribution mechanism of other software packages.
10. The program must be able to function with any technology (Coar, 2006).

While these criteria are very similar to many of the ideas found in the four freedoms of the free source movement, there are some basic differences in the two movements.

Difference between Free Software and Open Source Software

The terms “open source software” and “free software” describe many of the same programs. The basic difference between the two movements is their philosophies. According to Stallman, the free software movement is an ethical movement; it promotes the basic freedoms that should be offered to users (Why open source misses the point of free software, 2007). The movement asks users if they feel the restrictions placed on them by proprietary software companies are worth the functionality and support provided by the product. According to Michael Tiemann, who was present during the strategy meeting where the term “open source” was conceived, the concept was created as a means of “dump[ing] the moralizing and confrontational attitude that had been associated with ‘free software’” (History of the OSI, 2006). Instead, the open source movement chose to focus on the greater abilities of the software compared with proprietary programs. It believed the collaborative nature of the programs would lead to better performance (Stallman R. M., 2007). The open source movement also felt it would appeal to businesses if it did not focus on the ethics behind free software (Stallman R. M., 2007).

Because of the different focus of the two movements, the types of programs they produce vary. Programs produced by the FSF protect the four basic freedoms. However, programs produced by members of the open source movement are not concerned with

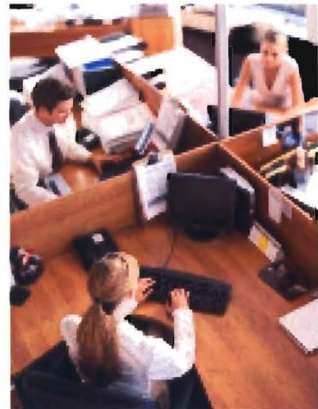
freedom. For example, the open source movement is working on open source digital rights management (DRM) software (Stallman R. M., 2007). DRM restricts users from accessing digital media, like music and movies. It also prevents users from transferring files they own. The FSF does not believe in DRM because it violates users' freedom.

The Case for Free Software and Ethical Dilemmas

The author will use "free software" to describe free and open source programs. Because of the high instance of software piracy, it is important to consider ethics when choosing software packages. In 2006, 1 of every 5 software packages installed in the United States was installed illegally; this was the lowest rate in the world (Business Software Alliance, 2007). This represents an \$8 billion loss (Business Software Alliance, 2007). Because of the high rate of piracy, organizations like the Business Software Alliance have made it easier to report piracy online. Businesses must ensure they are not pirating software, whether the action is intentional or unintentional; software piracy may result in costly penalties. The free software movement urges software users to consider the consequences of their actions. For this reason, "free software" is the best choice when considering software in business.

Chapter 3

Advantages of Free Software for Small Business



Free software has many advantages for small businesses. It can save them money, and it also offers functionality advantages. Free software also gives its users the freedom to change and redistribute the program. By using free software program, organizations experience a variety of benefits that allow them to expand and expand their software programs to incorporate new needs.

Cost Advantages

Even though free software is not always available at zero cost, it is much cheaper than its proprietary alternatives. In the introduction to Section 1, the cost of using traditional software packages was calculated for each computer in a company. These software packages are Microsoft Windows Vista Ultimate, Microsoft Office Professional 2007, Adobe Photoshop CS3, and McAfee Total Protection for Small Business. Ubuntu, Open Office 2.4, the GIMP, and Moon Secure Antivirus can replace these programs. These programs are all available for gratis, so a company could save \$1,433.96 per computer Microsoft Windows Vista Ultimate DVD – retail; Microsoft Office Professional 2007 – retail; Adobe Photoshop CS3; Total Protection for Small Business). The money an organization saves on software could be spent on the core processes of the business instead of the supporting processes.

For new businesses, saving money on software means they can afford to spend money on resources they may have been unable to afford or buy better quality resources. For example, consider a local advertising agency. The company plans to create print advertisements. Each of its computers must have an office productivity suite, a graphics manipulation program, and virus protection software. If it has five computers and chooses to utilize free software that is available for gratis on each system, it would have \$7,169.80 to spend on additional resources, including better printing equipment.

Existing organizations would incur the cost of the IT staff's time during the implementation of a new set of software suites, which may appear to cost more than traditional upgrades. However, these organizations would begin to see savings as each software company released new versions of its software. Table 2 shows the cost to upgrade to Windows Vista Ultimate, Microsoft Office 2007, and Adobe Photoshop CS3. Because McAfee Total Protection for Small Business is a yearly fee and upgrades are part of the subscription price, it is not included in the upgrade table.

Table 2: Software Upgrade Cost per Computer

SOFTWARE PACKAGE	COST PER COMPUTER
Windows Vista Ultimate	\$199.99
Microsoft Office 2007 Professional	\$269.99
Adobe Photoshop CS3	\$294.99
Total	\$764.97

Sources: Microsoft Windows Vista Ultimate SP1 English NA upgrade DVD - retail, Microsoft Office Professional 2007 version upgrade - retail, and Adobe Premiere Pro CS3 for Windows upgrade - retail

In addition to incurring the cost to obtain the upgrade, the company would also incur costs during the upgrade process. If the local advertising agency, which owns five computers, chose to upgrade its software, it could take three hours for a systems administrator to upgrade each computer. According to the Bureau of Labor Statistics (2006), the average hourly wage for a systems administrator is \$21.32. To upgrade five computers, it would cost the agency \$319.80 in labor. If the organization chose to implement free software solutions, it would take the same amount of time to install the programs, but the solutions are available at zero cost. Table 3 summarizes the costs the organization would incur under each scenario.

Table 3: Comparison of Costs of Software Upgrade and Free Software Implementation

COST TO UPGRADE				COST TO IMPLEMENT FREE SOFTWARE			
Cost	Hourly Rate	Hours	Total	Cost	Hourly Rate	Hours	Total
Software Upgrade			\$764.97	Software Purchase			--
Upgrade Labor	\$21.32	15	\$319.80	Upgrade Labor	\$21.32	15	\$319.80
Total			\$ 1,084.77	Total			\$319.80

Sources: Microsoft Windows Vista Ultimate SP1 English NA upgrade DVD - retail, Microsoft Office Professional 2007 version upgrade - retail, Adobe Premiere Pro CS3 for Windows upgrade - retail, and Bureau of Labor Statistics, 2006

Table 3 shows that the cost of a single upgrade is more than the cost to implement free software. However, free software is also upgraded on a regular basis. If the organization chooses to implement Ubuntu, it can install a long-term support (LTS) version. Support for this version lasts for three years (Get Ubuntu, n.d.). Microsoft releases major operating system upgrades approximately every two years (Microsoft Windows history, n.d.). Support for the previous version of the operating system ends approximately two years after the new release, so the lifecycle for each operating system is approximately four years (Microsoft Windows history, n.d.; Wilcox, 2007). OpenOffice releases major upgrades every four years, but it releases updates and patches every three months (Sanders, 2006). Microsoft releases a new version of the Office suite every three years. The GIMP releases, however, are not scheduled. The organization prefers to complete its goals before releasing the product instead of timeboxing, a technique where the software manufacturer sets a release date and works on the project until its release ([Gimp-developer] 2.4 release date, 2007; Dennis, Wixom, & Roth, 2006). Adobe releases a new version of Photoshop every 2 years (Grunin, 2004; Adobe Photoshop CS2, 2005; Grunin, 2007). Appendix B contains net present value (NPV) calculations for upgrade costs if the advertising agency utilized proprietary or free software packages for the next 20 years. The estimated inflation value was obtained from the Energy Information Administration (2007). The calculations show that the advertising agency would save \$6,905.88 if it chose to implement free software.

Functionality Advantages and Disadvantages

In addition to cost advantages, utilization of free software packages offers flexible functionality advantages. Because the entity utilizing the program has access to the source code, it can modify the program to fit its needs. For example, a group of Stunnix developers (for “stunning flexibility and functionality”) has created several modifications for OpenOffice (Details on modifications to OpenOffice.org made by Stunnix developers, n.d.). These modifications include improving the import and export functions between OpenOffice and Microsoft Office, user interface modifications that improve the appearance and functionality, and adding keyboard shortcuts for UNIX systems (Details on modifications to OpenOffice.org made by Stunnix developers, n.d.). If an organization’s employees have average programming skills, they can modify free software to add functionality that is important to the organization.

Despite the freedom to change programs to fit organizational needs, some free software may be unable to offer the same functionality as its proprietary counterparts. For example, the GIMP offers bitmap editing, but its vector editing functionality is limited (Porter, 2004). Bitmap editing involves the editing of photographs. Vector editing involves editing shapes created by mathematical formulas. These look like clip art images, and they can be resized infinitely without distorting the image (Agrella, n.d.). While the most common application of image manipulation software is bitmap editing, vector editing becomes important in creating advertisements and company logos. The GIMP will not allow users to do this, so additional free software must be downloaded to allow this functionality. Sodipodi and Inkscape both offer this functionality. To design an advertisement, the employee would have to use two editing programs.

Advantage of Freedom

The advantage of freedom cannot be overstated. Free software is compatible with many different types of operating systems, and it is compatible with many programs of the same type. For example, OpenOffice is compatible with Windows, Linux, Solaris, and Mac operating systems; its files can be opened by many office productivity suites, including Microsoft Office (OpenOffice.org download, n.d.). Any company that uses the software can modify it to reflect organizational needs; the company can add functionality, change the user interface, or limit the capabilities of the project. The company also has the right to provide other entities with these changes. With proprietary software, the organization is limited to changes the creator provides, and redistribution of the software is illegal. The free software movement values the entities' rights to modify and use the software.

Section 2

Useful Free Software Websites and Programs



Chapter List

Chapter 4

Collections of Free Software

Chapter 5

Types of Free Products

Introduction

Many small businesses are hesitant to use free software because they believe it lacks the features and functionality of its proprietary counterparts. In some circumstances, proprietary software offers more functionality, such as Adobe Photoshop. However, most free software matches the functionality of commonly used programs.

Businesses may also be hesitant to use free software because they believe the use of free programs by businesses is rare. According to Allan Alter, 90% of companies with revenues under \$500 million were projected to use Linux by the end of 2007 (The future is wide open, 2007). In addition, approximately 50% of small and medium sized businesses use only free and open source software (Alter, 2007). According to a study by *CIO Insight*, the most common use of free software is on servers (Alter, 2007). Approximately 40% of small and medium sized businesses surveyed by *CIO Insight* use open office suites like OpenOffice (Alter, 2007). The most common reason these entities use free source software is its lower cost (Alter, 2007). Many large corporations, such as Novel, use free software within the company (Van Horn, 2007).

Free software is available from a variety of sources, but Websites host most of the projects. Downloads do not cost anything, and these resources provide a wide variety of alternatives in several categories. The Websites also offer a variety of support solutions.

Chapter 4

Collections of Free Software



Free software is available from a variety of sources. Often, Websites allow users to request media containing the software, like Ubuntu.com. However, users may be charged shipping and media fees. Users can also obtain the software from Websites. Sites like SourceForge.net, freshmeat, RubyForge, Tigris.org, BountySource, BerliOS, JavaForge, and GNU's Savannah offer a wide variety of software programs for many different operating system types. They also offer collaborative environments for developers. However, there is a caveat to downloading software from these Websites: most are geared primarily toward the development and distribution of open source software. Despite these Websites' claims that the software is open source, many of the programs accessible to users are licensed through the GNU GPL.

SourceForge.net

SourceForge.net is an open source software development Website. It allows its one million users to manage open source projects, collaborate with other software developers, and obtain help from other users (What is SourceForge.net?, n.d.). It does not charge users to host their projects. SourceForge, Inc. includes many other technology-related Websites. These include business-focused endeavors like Slashdot, Linux.com, and NewsForge; software-focused sites like freshmeat; and technology-focused retail sites like ThinkGeek (What is SourceForge.net?, n.d.). SourceForge.net provides projects with their own Web address so users can access the content without navigating through the main Webpage.

freshmeat

freshmeat is one of SourceForge, Inc.'s software development Websites. It is very similar to SourceForge.net, but its projects are focused on UNIX and Linux. However, it does host several projects for other operating systems. According to the Website, freshmeat provides users with software and "a variety of original content on technical, political, and social aspects of software and programming" (About, n.d.). Like much of the free software community, freshmeat understands its users' belief that the software they use is a reflection of their personal values. It seeks active participation from members of its community.

RubyForge

RubyForge is a software development Website dedicated to the Ruby programming language. Ruby is an object-oriented programming language; it is also licensed under the GNU GPL. Ruby programs can run on Linux, UNIX, Mac OS X, and all Windows platforms (About Ruby, n.d.). As of April 13, 2008, RubyForge has 27,411 registered users (RubyForge:

Welcome, n.d.). RubyForge's target market is software developers. However, all users can benefit from the programs it offers.

Tigris.org

Unlike collaborative hosting sites like SourceForge.net and freshmeat, the projects Tigris.org hosts are designed to improved collaboration techniques utilized in software engineering (Open source software engineering, n.d.). It uses the free software/open source development techniques to create programs that allow software developers to collaborate on projects. While the projects hosted are designed to fulfill the needs of a very specific market, they can be a powerful resource when modifying free software to better benefit a business.

BountySource

BountySource is similar to SourceForge.net; it offers software downloads, hosting, and collaborative tools (BountySource: About, n.d.). However, it has a more business-like atmosphere than SourceForge.net. It emphasizes its project management features.

BerliOS

BerliOS is a software development site that aims to bring users, developers, and open source consultants together (About us, n.d.). It provides users with solutions to their business needs, developers with collaborative workspaces to host projects, and consultants with solutions for clients. Unlike other free and open source software Websites, it focuses on the people instead of the software.

JavaForge

JavaForge is similar to SourceForge.net, but it lacks SourceForge.net's user base. SourceForge.net has 1,829,386 registered users as of April 13, 2008, and JavaForge only has 32 registered users (Welcome to SourceForge.net, n.d.; Home, n.d.). While JavaForge is a valuable resource, its projects may not receive as much input from users.

Savannah

Savannah is GNU's free software Website. It is smaller than SourceForge.net, but its users are dedicated to the values behind free software. All software on the site is licensed through the GNU GPL. It has a sister site where projects that are not licensed under the GNU GPL can be hosted. The Website also advertises positions for in-progress projects (Welcome [Savannah], n.d.).

Resources

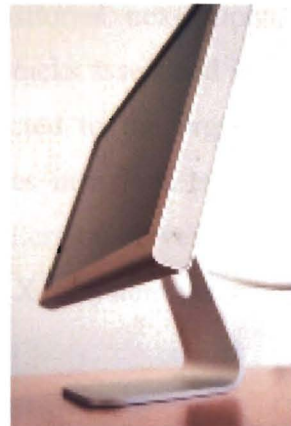
You can access free software from the following Websites:

- directory.fsf.org
- savannah.gnu.org
- savannah.nongnu.org
- www.berlios.de
- www.bountysource.com
- www.freshmeat.net
- www.javaforge.com
- www.opencroquet.org
- www.rubyforge.org
- www.sourceforge.net
- www.tigris.org
- www.ubuntu.com

Each of these Websites offers different collaborative environments and hosts different types of projects. Chapter 5 discusses the types of programs available. Section 3 shows how to use some of these tools.

Chapter 5

Types of Free Software



There are numerous types of free software programs. Each free software collaboration Website has its own method of labeling the types of programs, but some of the common business-related categories are adaptive technologies, audio, communications, database, desktop environment, email, graphics information management, Internet, multimedia, office/business, printing, security, software development, utilities, and video. Each of these categories has a variety of software packages. This chapter contains examples of software packages within each category.

Adaptive Technologies

freshmeat offers the most programs in the adaptive technologies category. Projects listed under adaptive technologies are programs specific to different business industries and business needs. For example, Teamwork is a project management tool that allows users to collaborate through a Web interface to satisfy business needs. It offers several features like problem tracking, cost control, and collaborative document repositories. nexB OpenAssets provides information technology (IT) departments with a tool to tracks assets and inventory, monitor the usage of assets, and discover any systems connected to the organization's network. RapidMiner allows users to extract data from databases in a Java environment. Ruckus MailFILTER allows the IT department to place spam filters on servers. freshmeat also offers resources for specific business industries, like CARE2X, a system that integrates medical information from different systems and different hospitals.

Audio

Many of the free software Websites provide audio playback and editing applications. The Free Software Directory offers many types of these files. For example, Ambisuite provides a full package of sound manipulation files. Xhippo manages MP3 playlists and automatically selects the appropriate media player. Checkmate scans MP3 files to ensure the file is consistent and to check whether the file is playable. To support the needs of a specific industry, the Free Software Directory offers programs like Camcaster, which allows radio stations to automate playlists that include music and commercials.

Communications

freshmeat, the Free Software Directory, RubyForge, and SourceForge.net all offer large repositories of communications programs. freshmeat's projects include Centericq, which is an instant messaging client that is compatible with ICQ clients, Yahoo!, AIM, IRC,

and Jabber. It also hosts SILC, a live conferencing program. Group-Office provides organizations with a Web-based, collaborative interface. It offers email and calendar features. The Free Software Directory hosts GNU Messenger, which is a messaging system designed entirely by the Free Software Movement. Users can also download LiveJournal, which aids users in creating a Weblog, or blog. In addition to creating the blog, it provides users with RSS Mix Tape so users can add articles to their blogs using RSS feeds. Bookblog provides a template for book bloggers to create reviews. RubyForge offers its own selection of communications applications, including stuff (the name of a software package), which allows users to collect wiki articles, forums, knowledge areas, technical support tickets, email, and instant messages and display them in a simple user interface online. Advertnet is a program that allows companies to manage a network of advertisements. It works with multiple types of advertising media, and it can also work on billboards displayed in virtual worlds. SourceForge.net is another source of communications programs. It offers Miranda, an instant messaging program that connects several instant messaging clients including AOL Instant Messenger, MSN Messenger, and Yahoo!. It also provides gRSShopper, which allows users to collect content from RSS feeds and distribute it from their own blogs, articles, and Websites.

Database

The Free Software Directory and freshmeat offer several database programs. The Free Software Directory hosts GNUData, which is the Free Software Foundation's database project. freshmeat gives users access to MySQL, a Sun Microsystems product that uses the structured query language (SQL). SQL is compatible with a variety of proprietary software packages, and many businesses already use MySQL.

Desktop Environment

Many of the free software Websites provide users with desktop environment applications that improve work productivity. RubyForge offers TimeKeeper, which allows employees to track the time they spend on tasks. It provides reports in daily, weekly, and monthly formats, and it also sends periodic reports via email. SourceForge.net offers ASuite. ASuite allows users to manage files, folders, and Webpages on removable media.

Email

Free software Websites also offer a variety of email programs. The Free Software Directory hosts GNU saucy, an anti-spam server program. It is responsible for checking incoming email and examining email accounts to ensure the accounts are legitimate. The Free Software Directory also hosts Thunderbird, Mozilla's email program. It provides a more customizable interface than Webmail programs, but it is not as expensive as commercial programs like Microsoft Outlook.

Information Management

Information management programs help organizations to organize employees, assets, and business flow. freshmeat provides a variety of these programs, including Enterprise CRM and Groupware System. It is a Web-based program that allows businesses to connect all functional areas and maintain a client database that allows the business to meet client needs better. Freshmeat also hosts Inventory Management Software, which is a Web-based program that allows users to track inventory and create transaction entries.

Internet

SourceForge.net offers a variety of Internet programs like Web browsers and filtering. K-Meleon is a Web browser based on Firefox. It allows users to customize its interface. Privoxy provides a Web page filtering service, allows parents to control Website access, remove advertisements from Websites, and allows users to manage their cookies.

Multimedia

Many multimedia editors and players are available. freshmeat hosts Ampache, an audio program that allows users to manage audio content and stream it to Websites. SourceForge.net's MediaCoder allows users to transcode audio and video among a large variety of formats.

Office/Business

Free software Websites offer several types of office and business software. The most common type of office program is the office productivity suite. The best free software alternative to Microsoft Office is OpenOffice. However, there are other types of office packages. freshmeat offers DataVision, which allows users to create user-friendly reports. They can be printed directly from the application or output into PDF files, text documents, or

spreadsheet files. RubyForge hosts Inquisitor; it allows users to create Web-based surveys and deploy them to populations.

Printing

The printing applications available through free software Websites are products that allow users to create documents in a variety of formats. For example, SourceForge.net's PDFCreator allows users to create PDF files by printing documents in any Windows program. freshmeat provides a different type of printing application. CheckBook Tracker provides checkbook-balancing features, but it also allows businesses and individuals to print checks from the program.

Security

Many types of free security programs are available. The Free Software Directory offers the Bulldog Firewall, which protects often-used and processing-intensive systems from malicious attacks. SourceForge.net offers Malzilla, a tool that discovers and removes spyware and adware from computers. Security applications are very important in the business world. Because computers may hold sensitive information, they should be protected from people who wish to obtain this information or programs designed to extract it.

Utilities

Many commonly used solutions, like Ultimate Boot CD, are free utilities. freshmeat offers memtest86. It is a utility that allows users to test their computer's memory. SourceForge.net hosts the Free, Ghost-like Cloning Solution (FOG). Ghost is a program provided by Symantec that allows users to create a computer image based on the operating system, drivers, programs, and setting on a master computer. After the image is created, it can be applied to other systems of the same model. This means that help desk staff do not need to spend time installing a standard set of packages on multiple computers.

Video

The Free Software Directory hosts Open Movie Editor. Open Movie Editor is a non-linear editing program similar to Windows Movie Maker. It allows users to cut video, edit video together, and add audio clips. Blender, which is hosted by freshmeat, is a more robust editing program for 3D videos. It allows users to perform modeling operations, texture objects within the video, and perform traditional video editing tasks.

Section 3

Using Free Software



Chapter List

Chapter 6

How to Use OpenOffice

Chapter 7

How to Use the GIMP

Chapter 8

Administrative Tools

Introduction

Using free software should be easy, so this section shows businesses how to use it instead of proprietary programs. A benefit of free software is the ability of users to adapt the program to their needs, so navigation is usually similar to familiar proprietary packages or more intuitive than those packages. OpenOffice, the GIMP, and administrative tools are demonstrated or discussed in this section.

OpenOffice allows users to create productivity suite documents that are compatible with Microsoft Office programs. The GIMP is an image manipulation program that edits bitmap images. Administrative tools include a variety of diagnostics, informative reports, and file management programs.

Chapter 6

How to Use OpenOffice



While OpenOffice is very similar to Microsoft Office, the productivity suite standard, its navigation is different. It allows users to format text, document layout, and insert objects such as drawings, pre-made graphics, and multimedia. OpenOffice 2.4 has several features of Microsoft Office 2007, but its user interface is similar to Office 2003.

OpenOffice Writer

Figure 2 shows some of the options available on the standard toolbars provided in OpenOffice Writer. The New Document button allows users to create new documents. They can view an existing document with the Open File button. They can save a document with the Save File button. The Email File button allows users to email the document to other users. When the Edit File button is pressed, it allows users to make changes to the open document. Unlike Microsoft Word, users can create PDF files from existing documents by pressing the Create PDF button. They can also print the document using the Print button. The Page Preview button allows users to view the document as it would be printed.

Figure 2: Standard Toolbars

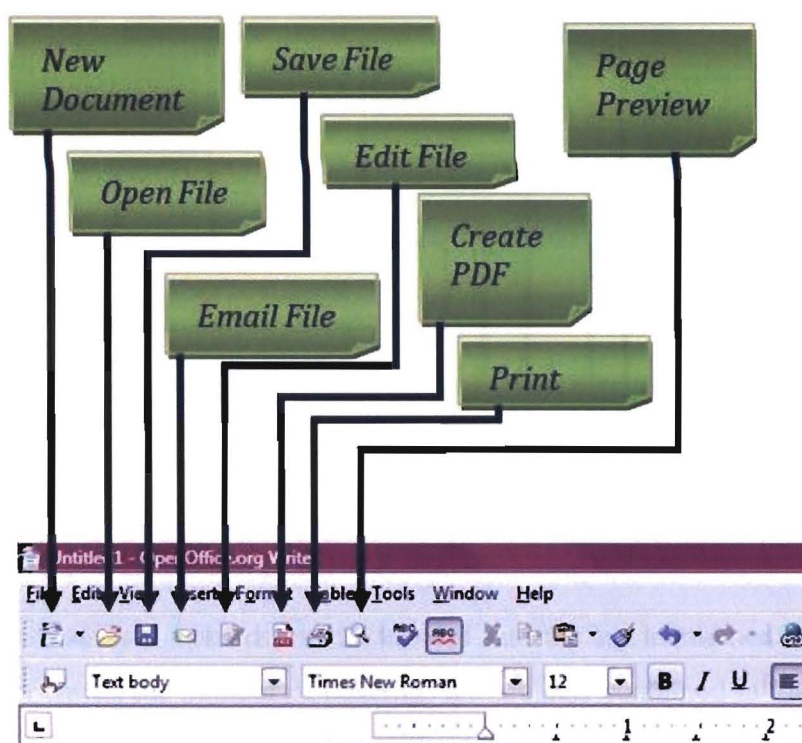


Figure 3 shows additional features on the toolbar. The Spell Check Tools allow users to view spelling mistakes as they type and check for spelling errors after they finish

typing. The Cut, Copy, and Paste buttons allow users to cut and copy text or objects from the document and place them in a different spot in the document or in a new document altogether. Format Painter allows users to copy text formatting from one location in a paragraph and place it on another section. The Undo and Redo buttons remove changes to the document and reapply them after they have been removed. Users can add a hyperlink by using the Hyperlink button on the toolbar. The Table button allows users to insert tables. Pressing the Drawing button shows the drawing toolbar. This allows the user to create basic images, such as arrows, circles, and squares, and place them in the document. The Find and Replace button allows users to find words and terms and replace them with another word or term.

Figure 3: Standard Toolbars

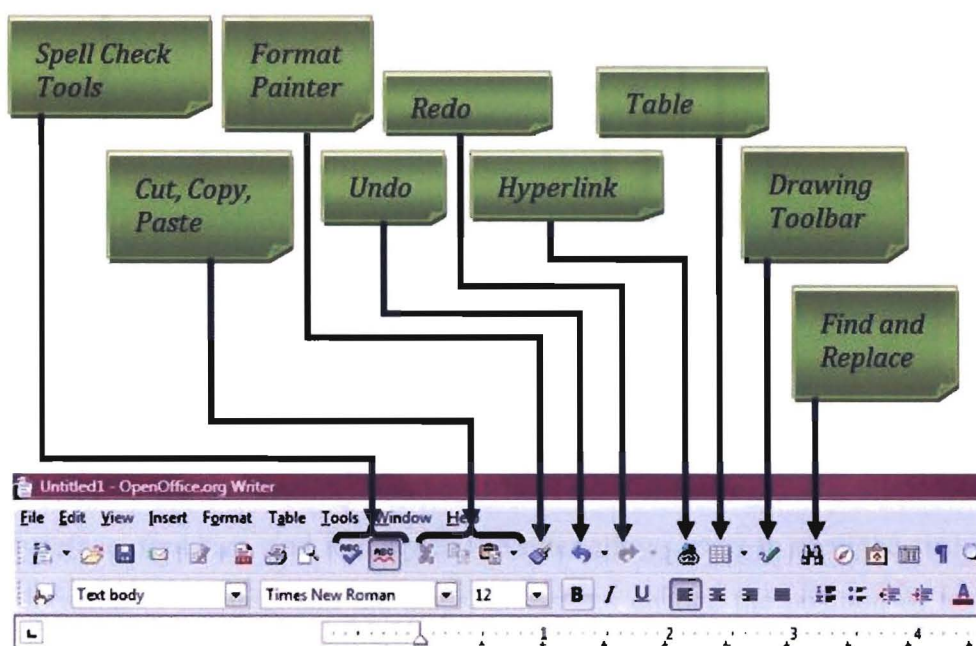


Figure 4 shows several features on the toolbar that are not contained in Microsoft Office. The Navigator tracks the number of headings and objects contained in the document. It allows users to access those sections quickly without searching through a long document. The Gallery feature provides a standard set of backgrounds, bullets, Website navigation icons, and sounds. Users can create a basic Website using OpenOffice Writer. The Data

Sources button allows users to input information about sources using OpenOffice Base, a database program. The tool allows users to store information about which sources were used within the document. By pressing the Nonprinting Characters button, users can view hard returns, spacing, and page breaks. The Zoom button allows users to Zoom in to or away from text. This can aid them in formatting the document. The Help button provides access to a Help feature.

Figure 4: Standard Toolbars

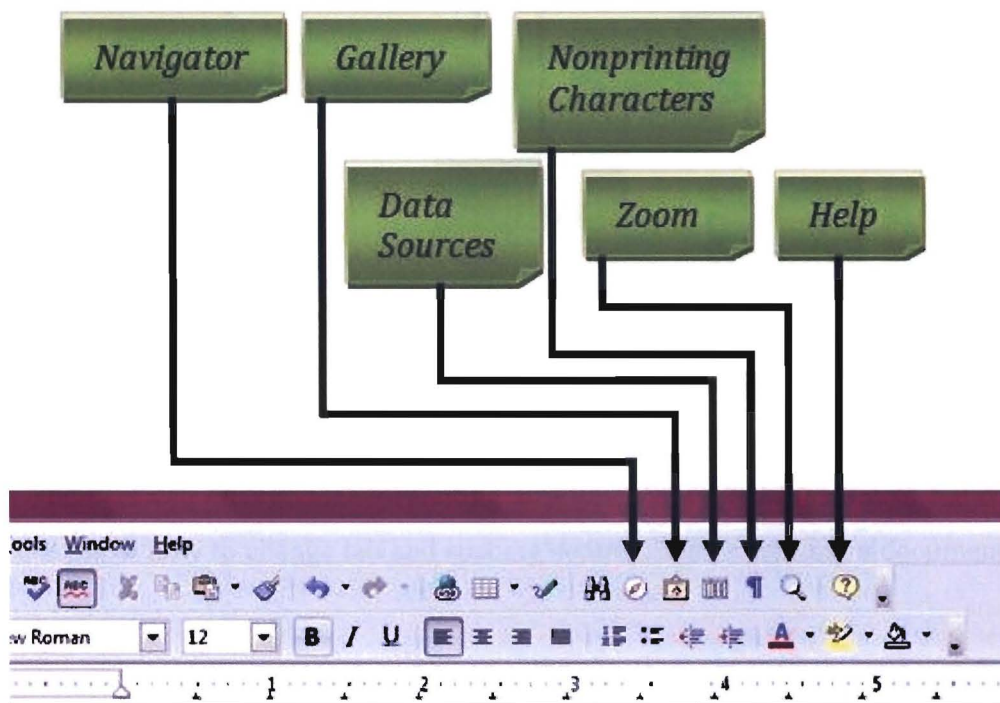
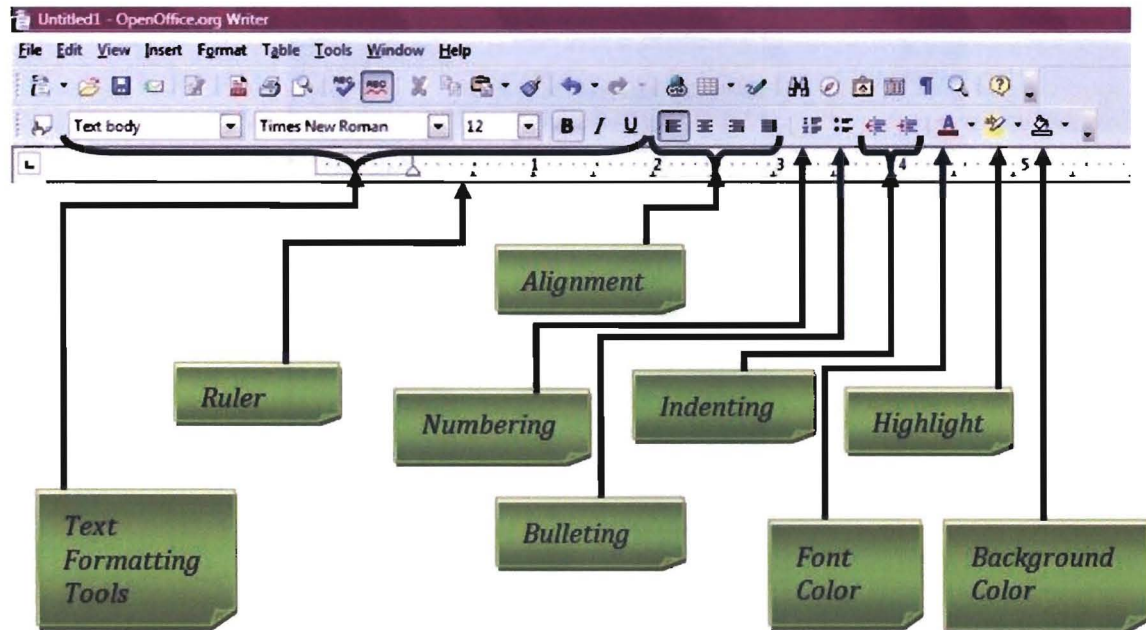


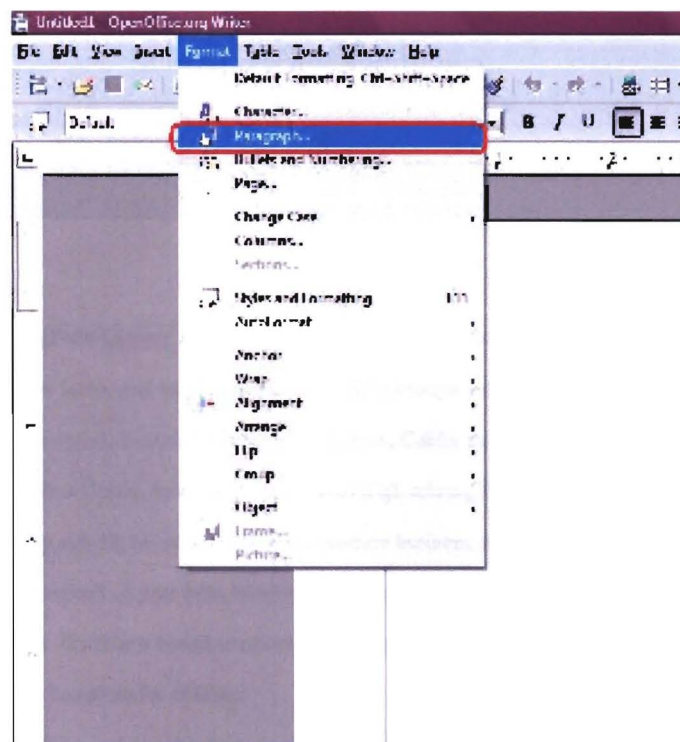
Figure 5 shows the Formatting Toolbar. The Text Formatting Tools allow users to change font, typeface, font size, and font style. The ruler allows users to view the size of the page and the location of margins and tab stops. Users can change the position of text and objects on a page by using the Alignment buttons. Text can be numbered with the Numbering button, or it can be bulleted with the Bulleting button. The Indenting buttons allow users to indent text without placing tab stops. The Font Color button changes the color of the text, and the Background Color button allows users to change the color on which the text is displayed. Users can highlight lines of text with the Highlight button.

Figure 5: Formatting Toolbar



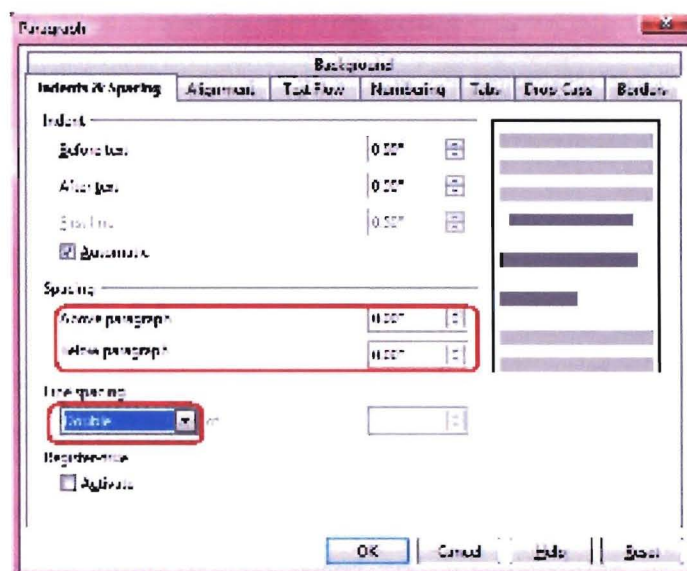
Creating documents in Writer is the same as creating documents in any word processing program. The user should set margins, tabs, and spacing options prior to typing the text. The user can change text formatting any time during the creation of the document. Figures 6-8 Show how to change tab and spacing settings before creating a document.

Figure 6: Format Menu



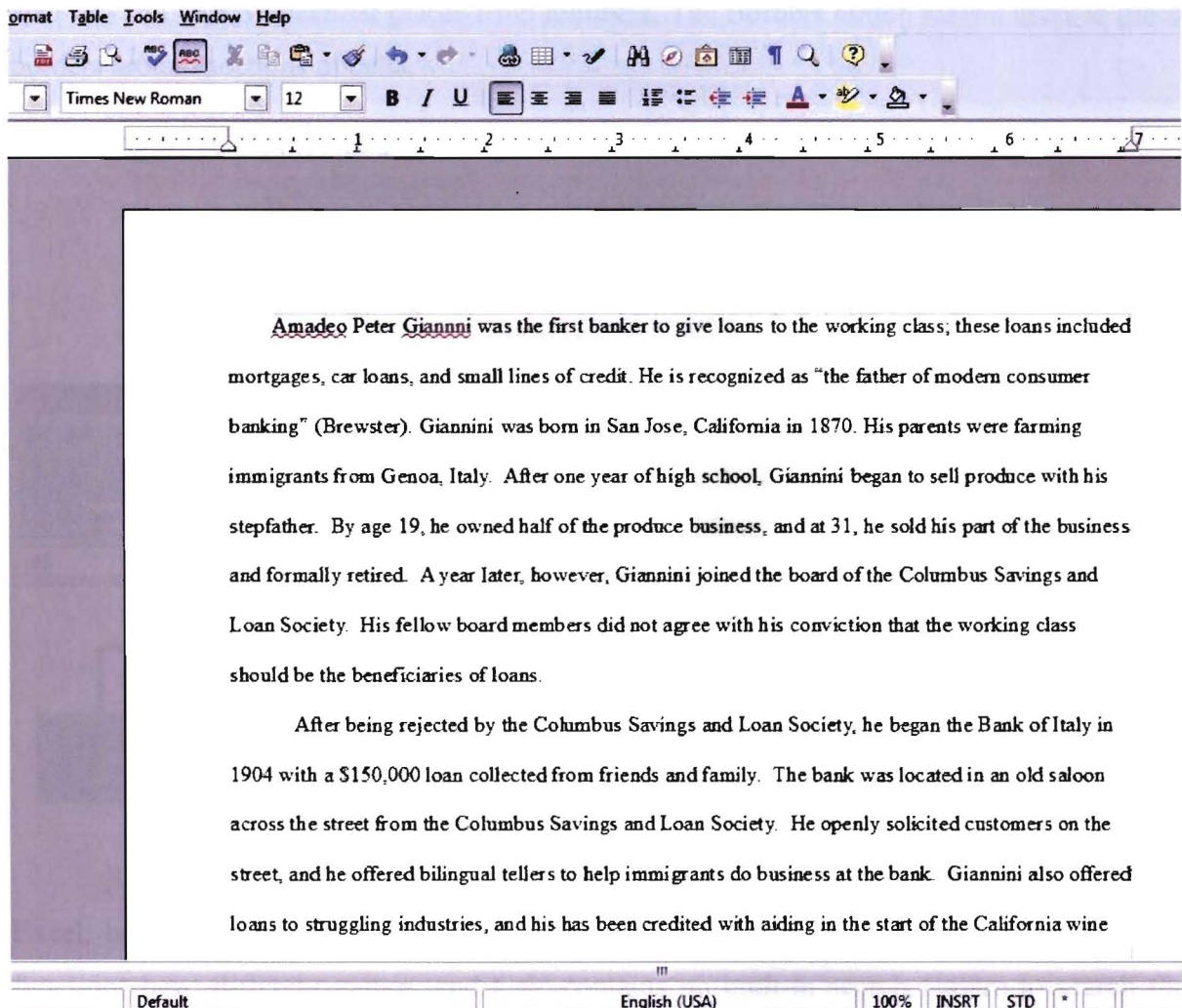
Go to Format>Paragraph.

Figure 7: Paragraph Settings



Change the Spacing options in the Indents and Spacing tab. In the Indent section, check automatic to set a tab stop at 0.5 inches.

Figure 8: Typing



Begin typing the document.

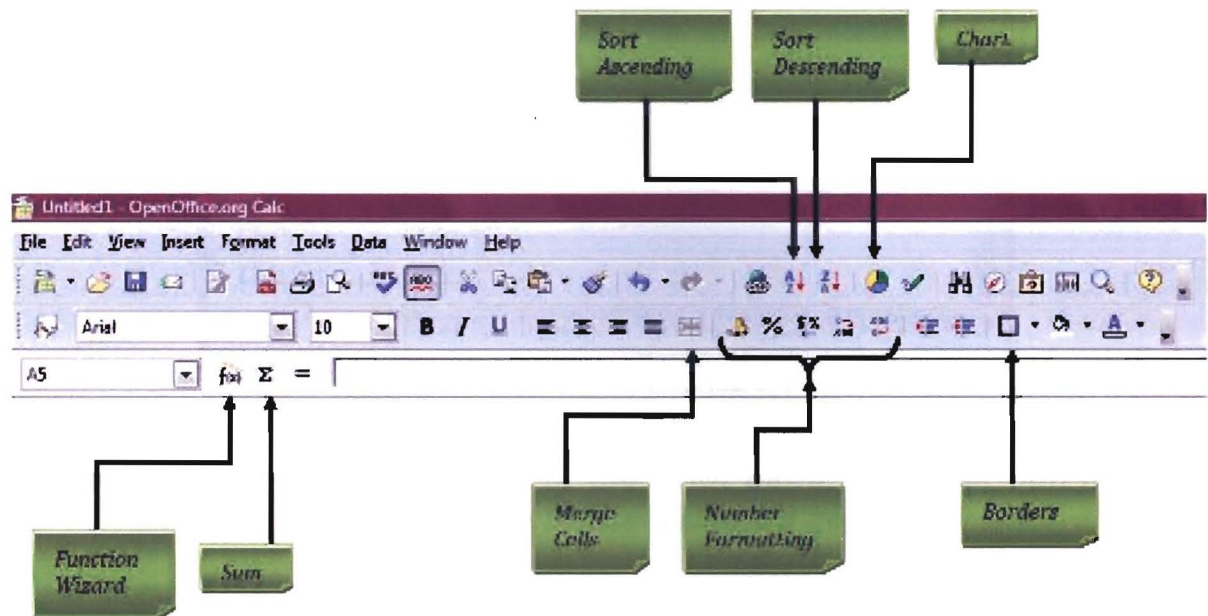
OpenOffice Calc

OpenOffice also contains a spreadsheet application called Calc. Calc looks like Microsoft Excel 2003, and it offers many of the same features as OpenOffice Writer. It is compatible with all Microsoft Excel files.

Figure 9 shows the additional options available in OpenOffice Calc. Sort Ascending and Sort Descending allow users to data based on alphabetization or numeration. The Function Wizard allows users to choose formulas from a standard set. The Sum button allows users to calculate totals for columns and rows automatically. Users can combine several cells with the Merge Cells button. They can also format numbers using the standard currency,

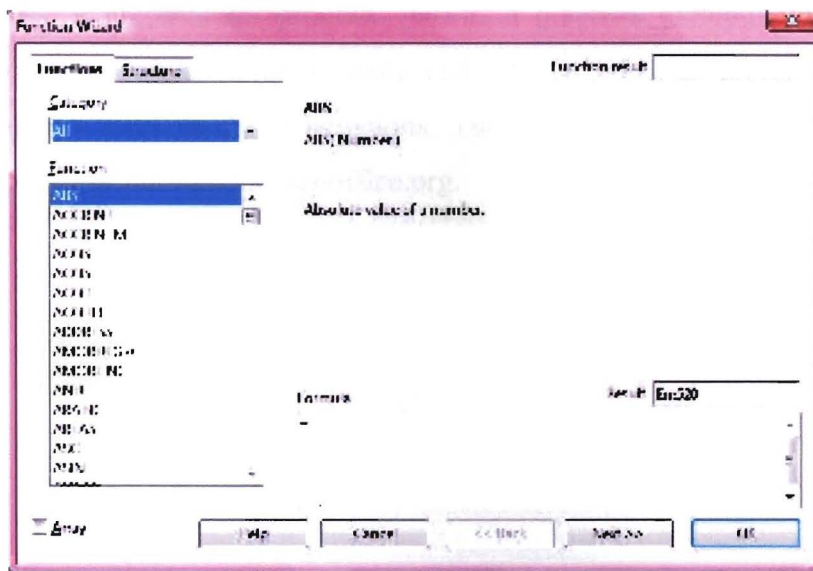
percent, and standard format buttons contained in the Number Formatting sections. Users can also add and remove decimal places from numbers. The Borders button allows users to place borders around sections of cells.

Figure 9: Calc Toolbars



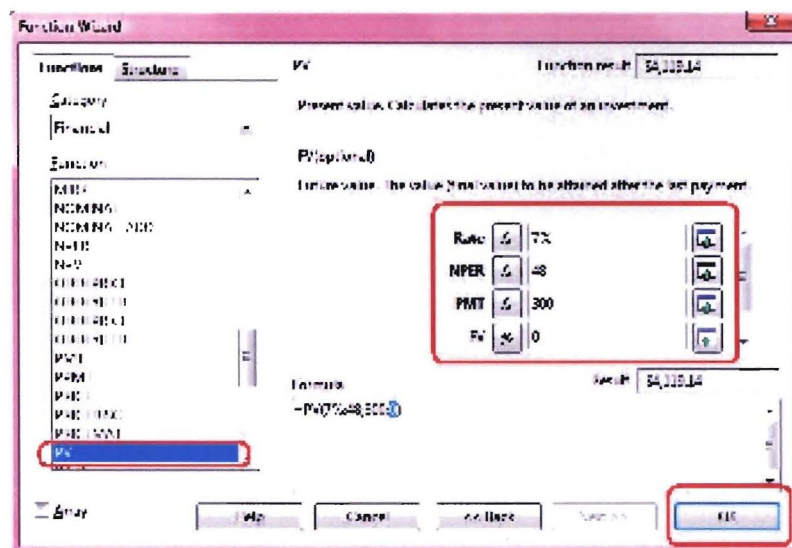
Spreadsheet creation using Calc is very similar to creating spreadsheets in Microsoft Excel, but experienced Excel users may find the Function Wizard confusing at first. The functions have different names, and Calc contains no built-in search feature to search for formulas. Figures 10 and 11 show how to use the feature.

Figure 10: Formula Wizard



This is the Function Wizard. The formulas are listed in the left task pane, and they are described in the right pane. The user can insert the formula in the selected cell.

Figure 11: Calculating Present Value



To calculate the amount of a loan with 48 payment periods, 7% interest, and \$300 monthly payments, double click the present value formula (PV) in the left task pane. Enter the information in the right pane. The Result is \$4,119. Press OK, and the formula and result will show in the selected cell. The user can also use data entered in cells to calculate the information.

In addition to offering Writer and Calc, OpenOffice provides Base, a database program; Impress, a presentation program; Draw, a graphics manipulation program that allows users to create organizational charts and add graphics to pictures; and Math, a program that allows users to create equations. Tutorials for all OpenOffice programs are available at <http://www.tutorialsforopenoffice.org>.

Chapter 7

How to Use the GIMP



The GIMP allows users to edit bitmap images, but its vector imaging abilities are limited. Users can edit photographs and images obtained from Websites using the program. While it has similar functionality to Adobe Photoshop, its buttons are slightly different.

Figure 12 shows the GIMP toolbox and some of its features. The Rectangle Select Tool, Ellipse Select Tool, and Free Select Tool allow users to select areas of the image with which they are working. They can then make changes to the selected area. Users can separate and remove colors from images by using the Select by Color Tool. The Fuzzy Select Tool is similar. However, the Fuzzy Select Tool only allows users to select colors close to each other; users can select similar colors some distance apart using the Select by Color Tool. The Scissors Select Tool allows users to select irregularly shaped objects from pictures and remove the object. Users can remove objects in the foreground of an image by using the Foreground Select Tool. The Paths Tool allows users to create paths, which can be converted to selections or placed on the image. Users can select a specific color from an image's color palette to apply elsewhere on the image with the Color Picker Tool. This allows users to clean up pixelated images. The Move Tool allows users to move layers or selections in the image. The Measure Tool allows users to measure pixel distances in an image. This can be useful, for example, when stacking pictures taken without a tripod. The Zoom Tool allows users to zoom in to and away from the image with which they are working (Peck, 2006).

Figure 12: The GIMP Toolbox

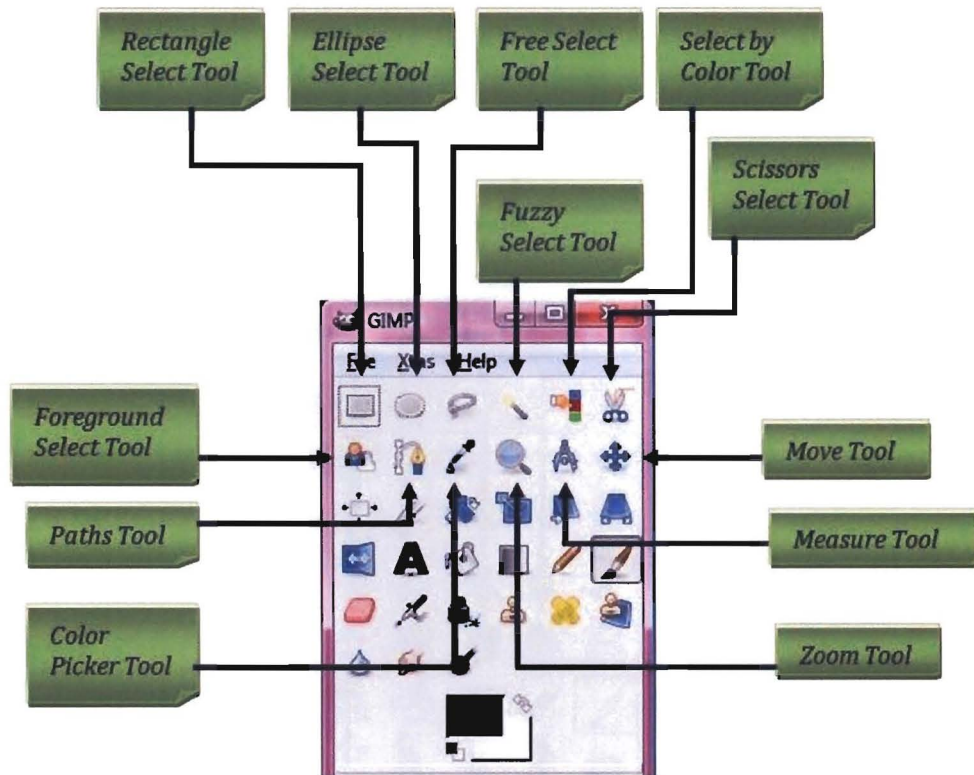


Figure 13 shows additional options available in the GIMP toolbox. The Alignment Tool allows users to align several objects in an image with a selected object. Users can resize and crop an image with the Crop Tool. The Rotate Tool allows users to rotate layers in an image. This is useful when adding text or objects from other images. The Scale Tool does not rescale the entire image; it only scales the selected layer. This is helpful when adding images from other pictures. Users can shift an image in multiple directions by using the Shear Tool. Users can create shadows of objects placed into an image by using the object's shape and using the Perspective Tool to ensure the shadow is proportionate to the image. The Flip Tool allows users to flip layers and create object reflections. Users can place text in an image with the Text Tool. The Bucket Tool allows users to fill a selection with either the foreground or the background color. Users can fill a selection with a blend of foreground and background colors or with a blend of user-defined colors with the Blend Tool. The Pencil Tool allows users to draw a sharp line in an image. The Paintbrush Tools allows users to create a freehand line with a fuzzy edge (GNU Image Manipulation Program, n.d.).

Figure 13: The GIMP Toolbox

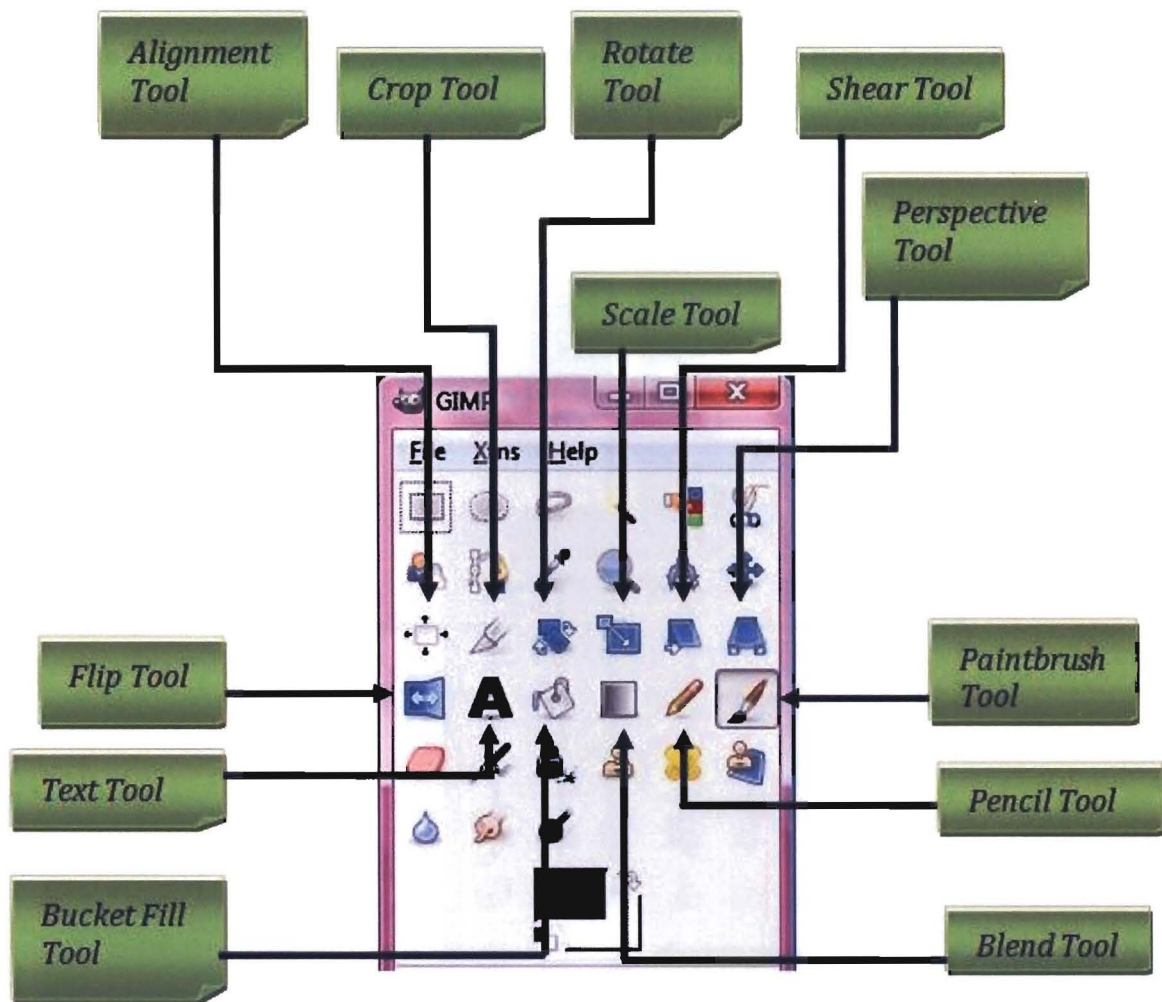
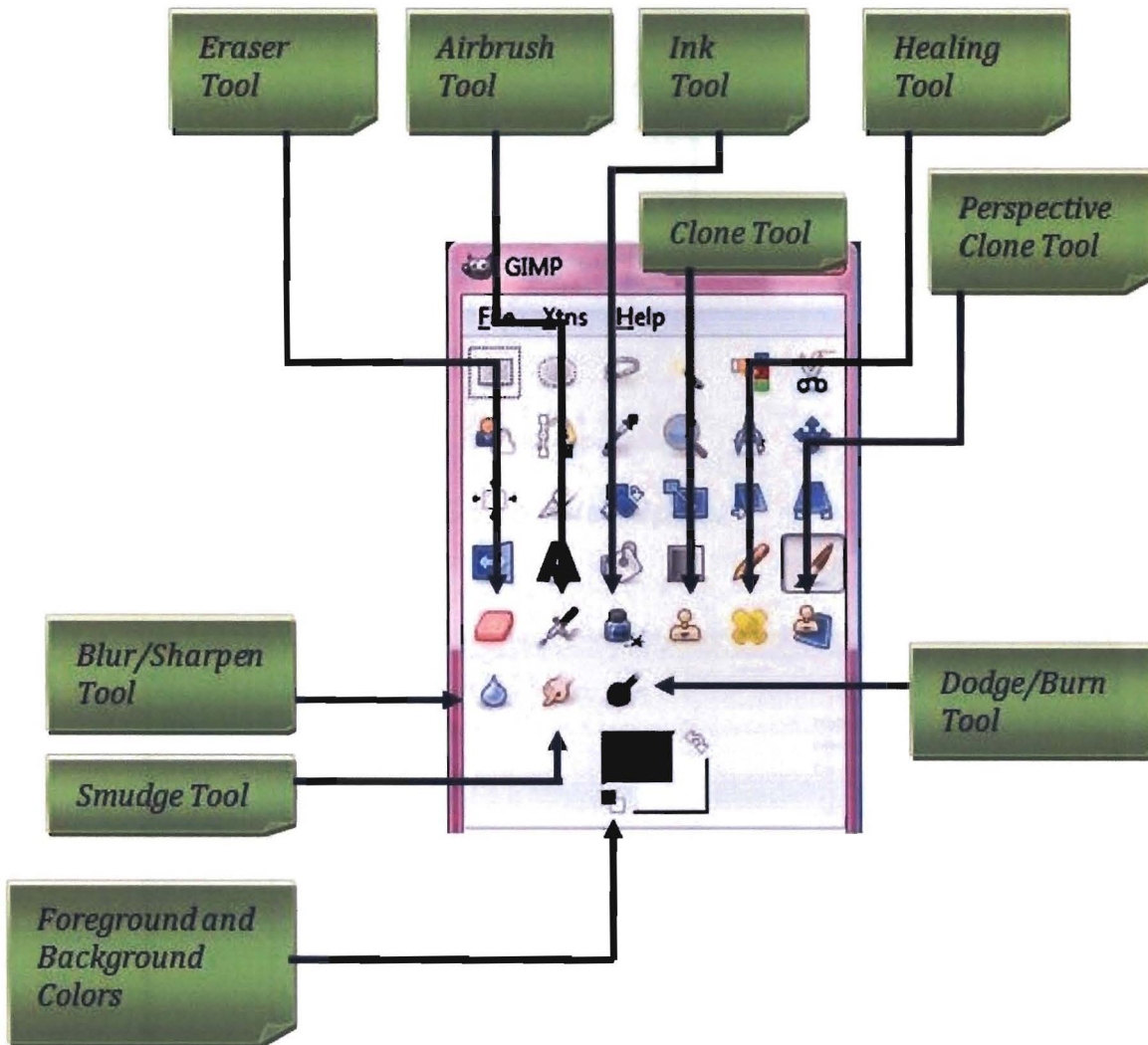


Figure 14 shows the final set of options available in the GIMP toolbox. The Eraser Tool allows users to erase parts of an image. If a layer has an alpha channel, the eraser makes the layer transparent. The Airbrush Tool creates a fuzzy, time sensitive line, which means the longer it takes the user to move the cursor, the darker the line. The Ink Tool is the most useful with a tablet; it creates lines sensitive to pressure that are similar to lines created with fountain pens. The Clone Tool allows users to repair problem areas in digital photographs by replacing pixels in the problem area with pixels from another area. The Healing Tool allows users to remove blemishes by cloning pictures from one area and using the destination area's parameters to apply the image. Users can clone pixels with a pre-defined perspective with the Perspective Clone Tool. If small parts of the image are too soft or too hard, users can use the

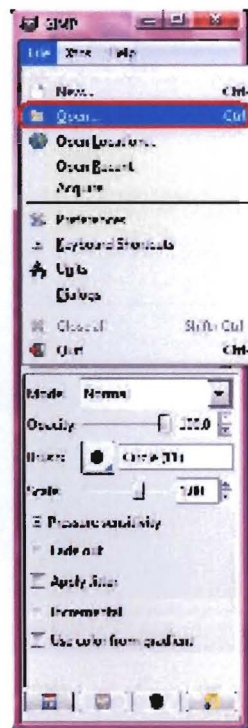
Blur/Sharpen Tool to correct the image. The Smudge Tool picks up color and distributes the color over an area as the user drags the mouse. It is useful when removing objects from an image. The Dodge/Burn Tool allows users to lighten and darken parts of an image. Users can set the foreground and background colors with the Foreground and Background Colors pane.

Figure 14: The GIMP Toolbox



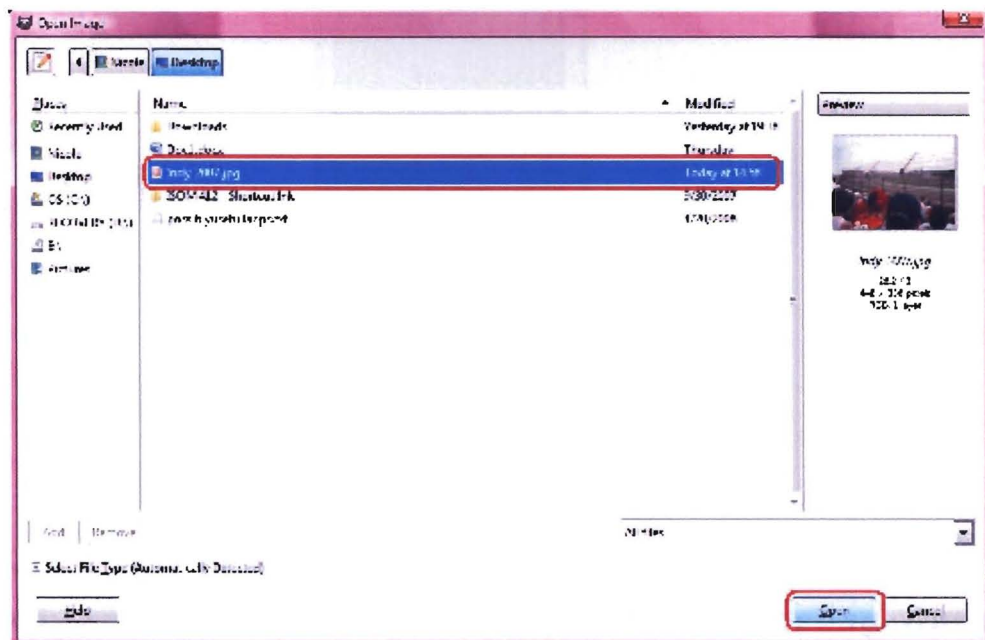
Manipulating images with any image manipulation program can be difficult for inexperienced users. The following example provides only a brief example of features and functionality of the GIMP. Many books, like *Beginning GIMP* by Akkana Peck, and Websites, like <http://docs.gimp.org/en/>, provide tutorials and detailed descriptions of tools. Figures 15-26 show how to edit a digital photograph.

Figure 15: Open a File



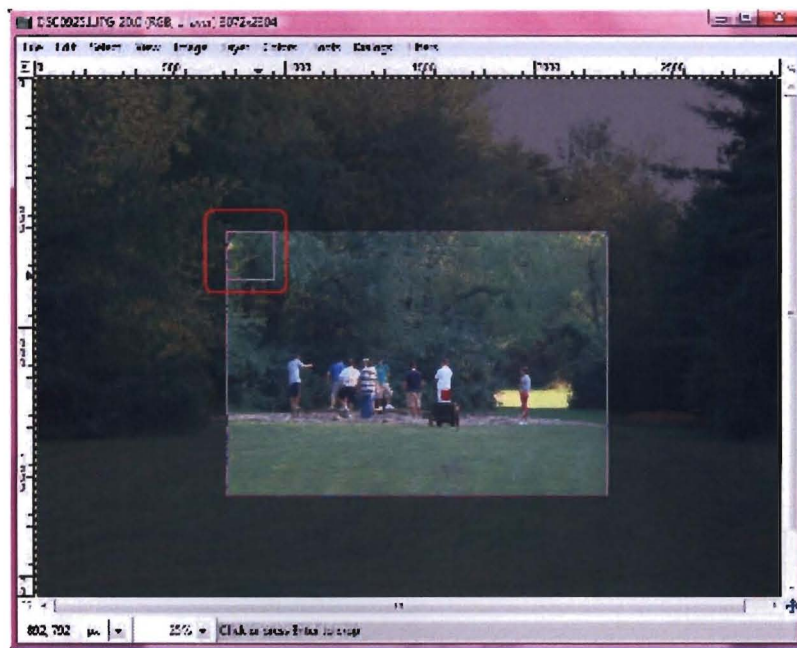
Go to File>Open.

Figure 16: Select a File



Browse to the directory where the file is stored. Select the file and press Open.

Figure 17: Crop Image



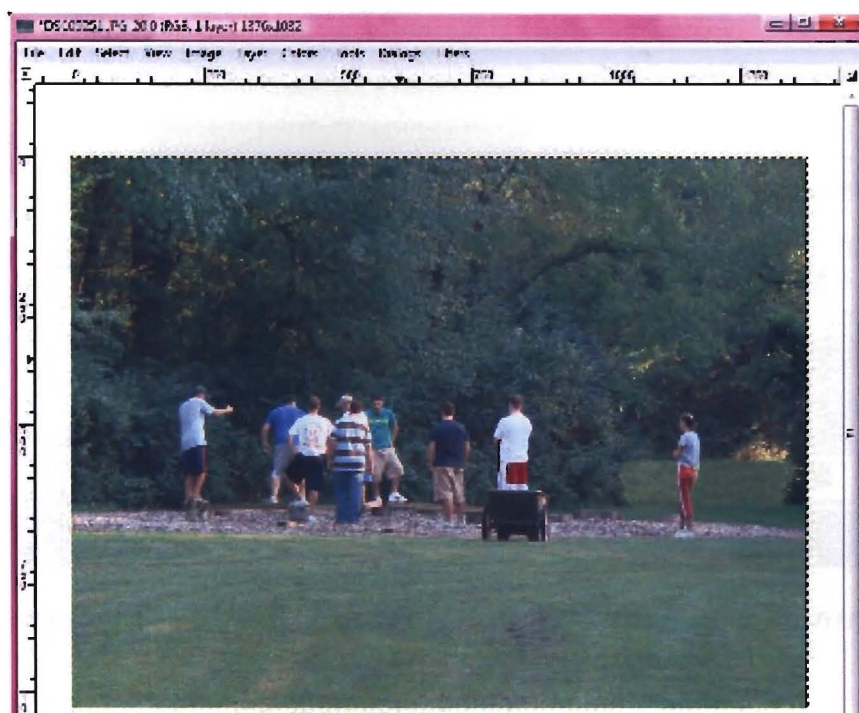
Use the Crop Tool to select an area to crop. After selecting the area, press a square in a corner to complete the cropping.

Figure 18: Cloning



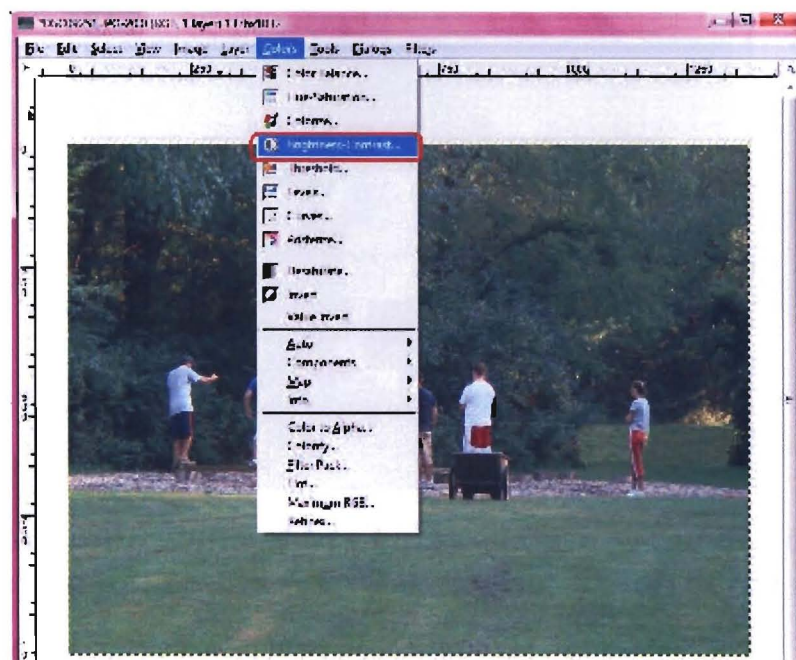
The grassy knoll behind woman in red pants is distracting. Open a second picture with darker grass. Use the Clone Tool to change the color of the grass.

Figure 19: After Cloning



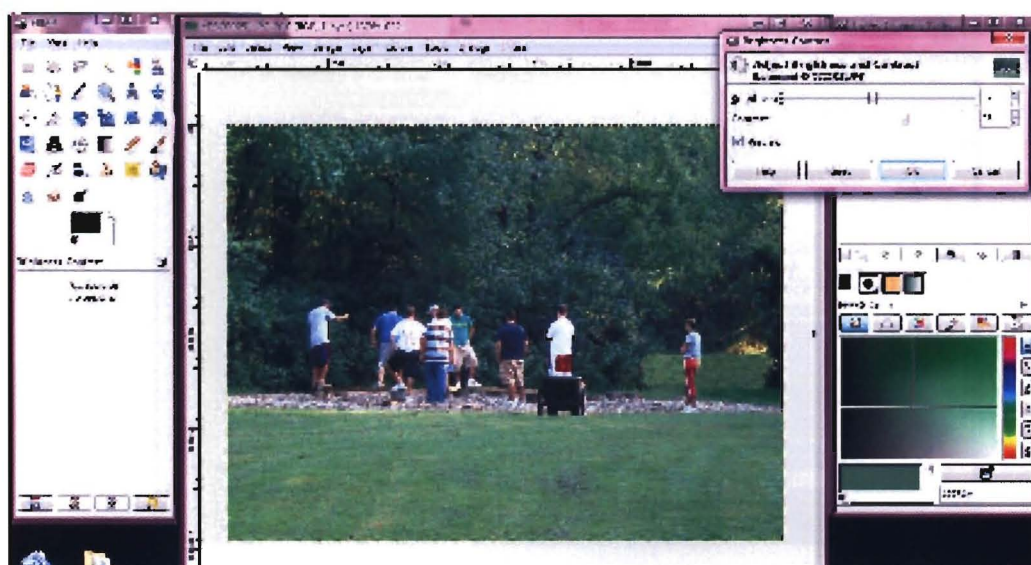
The grassy knoll is less noticeable.

Figure 20: Changing the Brightness and Contrast



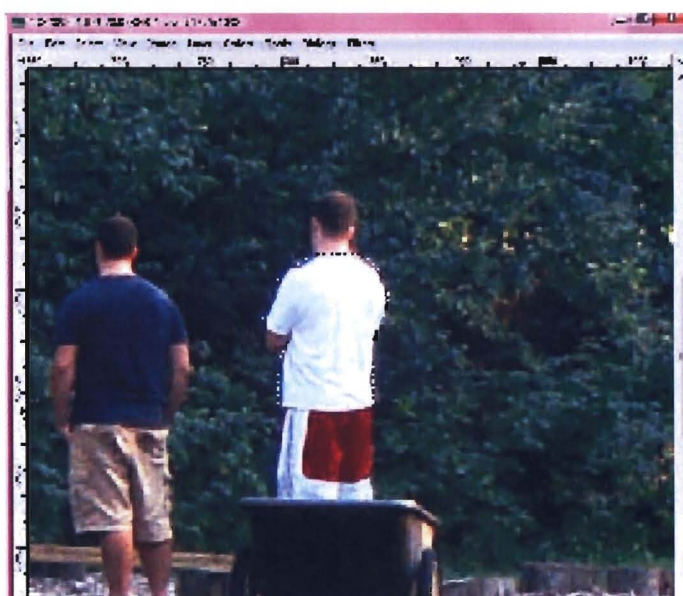
*To change the brightness and contrast of the picture, go to
Colors>Brightness-Contrast.*

Figure 21: Completed Brightness and Contrast



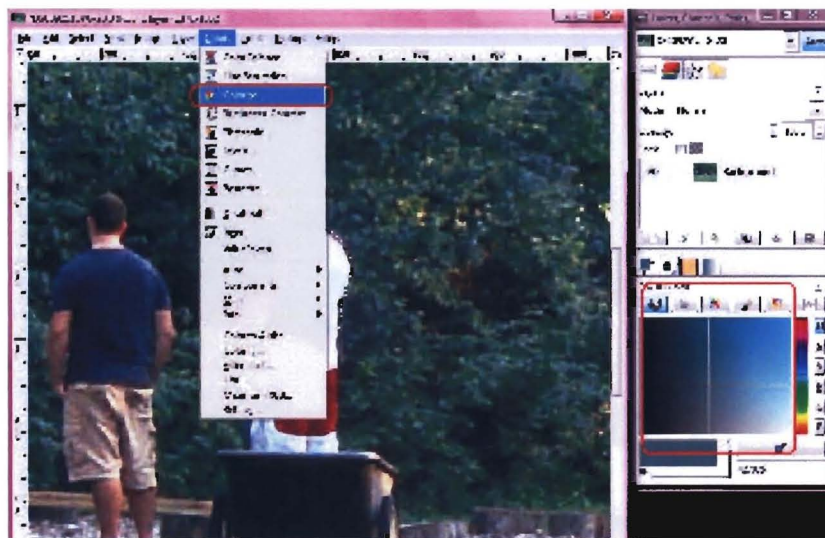
Use the Preview feature to adjust the Brightness and Contrast. Press OK when complete.

Figure 22: Free Select Tool



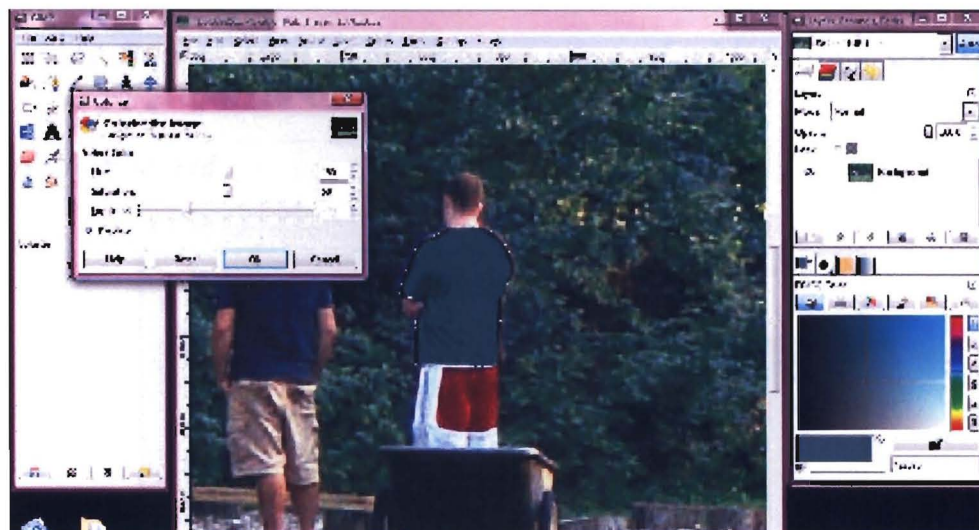
The people wearing white shirts in the picture stand out too much. To adjust this, use the Free Select Tool to select the shirt.

Figure 23: Colorize



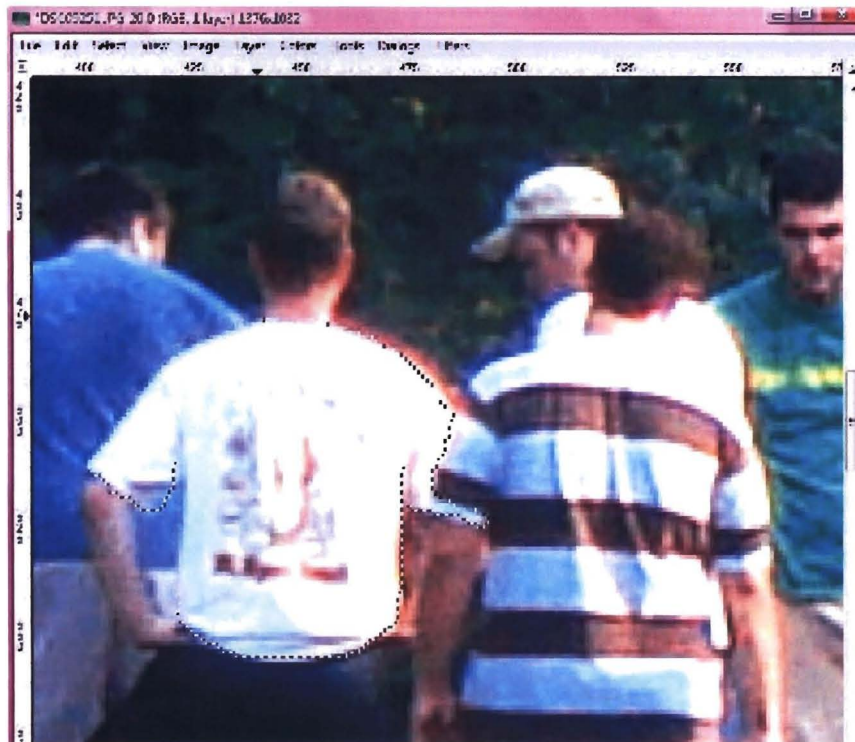
*To change the color of the shirt, select a color in the right task pane.
Go to Colors>Colorize.*

Figure 24: Colorizing



Move the lightness slider to change the color of the shirt. Press OK.

Figure 25: Continue Colorizing



Use the Free Select Tool to select the second white shirt. Use the Colorize option to darken the shirt.

Figure 26: Finished



After Cloning and Colorizing the picture, it will look like this.

The GIMP allows users to perform a wide variety of editing functions on photographs and other images. In addition to performing cloning, colorizing, and changing the brightness and contrast of a picture, users can add objects to a picture. Image manipulation programs are important tools in creating advertisements and promotional materials.

Chapter 8

Administrative Tools



Users have access to a variety of administrative tools through free software Websites. They can access programs that allow them to discover hardware problems, monitor individual systems for security breaches, and perform a wide variety of other tasks. The Ultimate Boot CD for Windows (UBCD4Win) has a large number of tools for system diagnostics and protection.

Anti-Spyware Tools

The best anti-spyware tools included on UBCD4Win are AdAware and SpyBot. These tools allow users to scan their systems for unwanted programs and files. They are helpful in finding programs virus scanners cannot find.

Antivirus Tools

The best antivirus tools contained in UBCD4Win are AVG Free and AVPersonal. However, many free antivirus programs are designed for personal home use only. Users should be aware of the licensing restrictions placed on free virus programs. They should consider downloading Moon Secure Antivirus from SourceForge.net.

Disk Tools – Backup and Cloning

UBCD4Win contains many hard drive backup and cloning tools. CopyWipe copies files from one drive to another; it also erases all data from selected drives. Disk Image creates images from hard drives and applies them to other hard drives. SelfImage also copies data from one drive to another; it also backs up hard drive data.

Disk Tools – Defrag

Defragmentation tools allow users to move parts of saved files closer together, preferably contiguously, on the hard drive. UBCD4Win offers several of these tools users can run in addition to the Windows Disk Defragmenter. These include AusLogics Defrag, Defraggler, and Dirms.

Disk Tools – Diagnostic

The diagnostic tools contained on UBCD4Win perform a variety of checks. Bart's Stuff Test 5 runs stress tests on all storage devices. DskChkup monitors the Self Monitoring Analysis and Reporting Technology (SMART) attributes of hard drives on the system. SMART attributes include the number of starts and stops on the drive, the number of hours

the hard drive has been turned on, and the device's temperature. Disk Check checks hard drives for errors. UBCD4Win also includes the Western Digital diagnostic software.

File Management – Recovery

UBCD4Win contains several recovery programs that ensure file integrity. Disk Investigator allows users to search hard drives to determine the effectiveness of file removal. It will permanently delete the files. Free Undelete recovers deleted files. Unstop Copier recovers files from hard drives that have been damaged.

Password Tools

The password tools contained on UBCD4Win allow users to access system passwords and change them. PasswordPro manages passwords, generates passwords, and recovers lost passwords. Sala Password Renew allows users to change the passwords on local accounts.

System Information Tools – Information and Diagnostic Tools

The information and diagnostic tools contained on UBCD4Win monitor system hardware. Nero InfoTool provides information about CDROM and DVDROM drives. System Info allows users to see detailed information about their hardware and network connections. WinCPUID checks processor frequency and chipset information. WUL shows users what Windows Updates have been installed on their systems.

UBCD4Win is very useful in identifying hardware problems. It also allows users to manage information and secure their systems. For users operating on an Ubuntu or Linux kernel operating system, Ultimate Boot CD is also available. It provides similar features as UBCD4Win.

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Appendix A

Overly and Kalyvas' Basic Software Checklist

This checklist provides a starting point for assessing software license agreements. Corporate dynamics and the specific needs of the licensee should also be taken into consideration.

- ☐ Has appropriate research been conducted on this vendor? Depending on the size of the transaction, this may include requests for financial data and Internet searches for mentions of the vendor.
- ☐ Does the agreement clearly define the application(s) being licensed?
- ☐ Does the license agreement define what the software is supposed to do for the licensee?
- ☐ Does the licensee have any specific performance requirements for the software, such as the ability to integrate with other programs and achieve certain performance levels? If so, are those requirements included in the agreement?
- ☐ Who is the “licensee?” Is “licensee” defined broadly enough to encompass all possible users of the software?
- ☐ What is the scope of the license? What are the limitations on the licensee's use of the software? Does the scope of the license include all intended uses of the software?
- ☐ What fees are due under the agreement? What is the projected yearly cost of operating the software? Have all possible revenue streams been identified, including license fees, support fees, interface fees, customization fees, and professional service fees? Are there limitations on future fee increases? How are support fees calculated?
- ☐ What is the term of the license? Is this a perpetual license or a term license? If it is a term license, how is the agreement renewed?
- ☐ What is the expected useful life of this application to the licensee?
- ☐ If the licensee has unique specifications, interoperability requirements, or functionality expectations for the software, have those specifications been expressly included in the agreement?
- ☐ Is the software subject to acceptance testing? If so, how will acceptance testing be conducted?
- ☐ How long will it take to implement the software? Is there a formal implementation plan? Does the implementation include object milestones for the vendor to achieve? Are payments tied to those milestones?
- ☐ Does the vendor place the source code for its software into escrow with a third party?
- ☐ Who is the escrow agent? Has a copy of the escrow agreement been provided to the licensee for review?
- ☐ What warranties are provided? Are any special or unique warranties required for this application, especially performance in accordance with regulatory requirements like the Health Insurance Portability and Accountability Act (HIPAA)?
- ☐ What are the vendor's support obligations? Is there a separate support agreement, or is support integrated into the license agreement? If this is a critical application, are there specific service levels for responding to support calls? How long is the vendor obligated to support the software?
- ☐ Will the vendor have access to proprietary or confidential information about the licensee and/or its customers? If so, have appropriate confidentiality and security

provisions been incorporated into the agreement?

☐ What indemnities has the vendor provided?

What is the limitation of the liability? What types of damages are excluded or limited?

☐ What is the overall cap on liability? Is anything excluded from the limitation of liability? Who is protected by the limitation of liability?

☐ Can the licensee assign the agreement to a successor entity or affiliate?

☐ Does the licensee currently intend or does it reasonably foresee the need to outsource operation of this application to a third party?

Source: Software Agreements Line by Line, 2004

Appendix B

Net Present Value of Upgrade Costs for Proprietary and Free Software

The tables show the net present value (NPV) to upgrade free and proprietary software. The costs include the cost incurred to purchase the upgrade and the cost of labor to install the upgrade.

COST TO UPGRADE PROPRIETARY SOFTWARE OVER 20 YEARS

	Microsoft Operating System Upgrade Cost	Office Suite Upgrade Cost	Photoshop Upgrade	Labor Cost per Hour	Hours to Upgrade	Total Labor Cost
2007	\$199.99	\$269.99	\$294.99	\$21.32	15.00	\$319.80
2008				\$21.75	0.00	\$0.00
2009			\$306.91	\$22.18	3.75	\$83.18
2010		\$286.52		\$22.62	3.75	\$84.84
2011	\$216.48		\$319.31	\$23.08	11.25	\$259.62
2012				\$23.54	0.00	\$0.00
2013		\$304.05	\$332.21	\$24.01	7.50	\$180.07
2014				\$24.49	0.00	\$0.00
2015	\$234.32		\$345.63	\$24.98	11.25	\$281.02
2016		\$322.66		\$25.48	3.75	\$95.55
2017			\$359.59	\$25.99	3.75	\$97.46
2018				\$26.51	0.00	\$0.00
2019	\$253.64	\$342.41	\$374.12	\$27.04	15.00	\$405.58
2020				\$27.58	0.00	\$0.00
2021			\$389.23	\$28.13	3.75	\$105.49
2022		\$363.37		\$28.69	3.75	\$107.60
2023	\$274.54		\$404.96	\$29.27	11.25	\$329.26
2024				\$29.85	0.00	\$0.00
2025		\$385.61	\$421.32	\$30.45	7.50	\$228.38
2026				\$31.06	0.00	\$0.00
2027	\$297.17		\$438.34	\$31.68	11.25	\$356.40
NPV	\$1,371.81	\$2,093.19	\$3,519.26			\$2,351.47
Total Cost						\$9,335.73

Sources: Microsoft Windows Vista Ultimate SP1 English NA upgrade DVD - retail, Microsoft Office Professional 2007 version upgrade - retail, Adobe Premiere Pro CS3 for Windows upgrade - retail, and Bureau of Labor Statistics, 2006

COST TO UPGRADE FREE SOFTWARE OVER 20 YEARS						
	Ubuntu Upgrade Cost	OpenOffice Upgrade Cost	GIMP Upgrade	Labor Cost per Hour	Hours to Upgrade	Total Labor Cost
2007	\$0.00	\$0.00	\$0.00	\$21.32	15.00	\$319.80
2008				\$21.75	0.00	\$0.00
2009			\$0.00	\$22.18	3.75	\$83.18
2010	\$0.00			\$22.62	7.50	\$169.69
2011		\$0.00	\$0.00	\$23.08	7.50	\$173.08
2012				\$23.54	0.00	\$0.00
2013	\$0.00		\$0.00	\$24.01	11.25	\$270.11
2014				\$24.49	0.00	\$0.00
2015		\$0.00	\$0.00	\$24.98	7.50	\$187.35
2016	\$0.00			\$25.48	7.50	\$191.10
2017			\$0.00	\$25.99	3.75	\$97.46
2018				\$26.51	0.00	\$0.00
2019	\$0.00	\$0.00	\$0.00	\$27.04	15.00	\$405.58
2020				\$27.58	0.00	\$0.00
2021			\$0.00	\$28.13	3.75	\$105.49
2022	\$0.00			\$28.69	7.50	\$215.20
2023		\$0.00	\$0.00	\$29.27	7.50	\$219.51
2024				\$29.85	0.00	\$0.00
2025	\$0.00		\$0.00	\$30.45	11.25	\$342.56
2026				\$31.06	0.00	\$0.00
2027		\$0.00	\$0.00	\$31.68	7.50	\$237.60
NPV	\$0.00	\$0.00	\$0.00			\$2,429.85
Total Cost						\$2,429.85

Sources: Bureau of Labor Statistics, 2006